10:00 M.Viaggio 21.3°C

Turn & Push

TECHNICAL MANUAL

Control system for pellet stoves

REV. 2.0 - firmware 1.0

0   CONTENTS

0 CONTENTS

8 HYDRO CONFIGURATION

9 DUCTED AIR CONFIGURATION

1 CONTROL SYSTEM DESCRIPTION

2 TECHNICAL FEATURES

The *RICA* control system for pellet stoves is made up of a set of electronic devices, which allow you to manage different types of pellet stoves (simple air, ducted air, and hydro).
In particular, this system allows you to check pellet stove components in order to:

- ▶ Efficiently manage the combustion process

- ▶ Detect and handle any malfunctions

The main system components are:

- Control Unit

- Display (LCD)
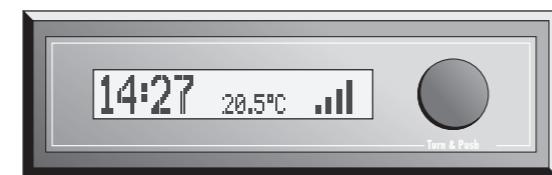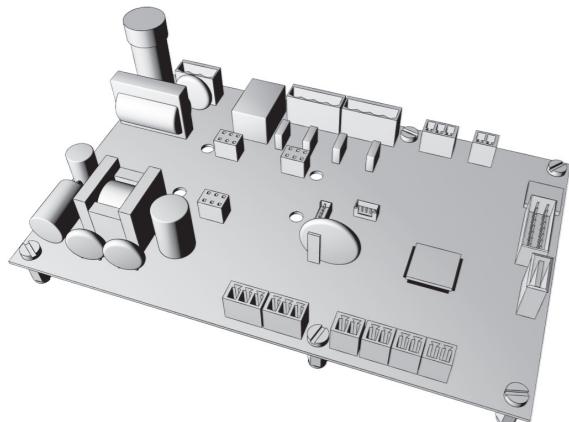
- IR (Infrared) Remote Controller

2.1 CONTROL UNIT

ELECTRICAL FEATU-RES	Supply Voltage	230 Vac ± 10%, 50Hz
	Insulation Class	Class II with SELV Secondary Circuit
	Maximum Power	500W
ENVIRONMENTAL FEATURES	Working Temperature	0..55°C
	Humidity	0..85% RH without condensation
DIMENSIONS	B X H X S	112 X 178 X 45mm
INPUT	Insulated	2 X Motor Encoders (Hall Sensor)/Auxiliary Inputs (free contacts) 3 X NTC Probes (3X10KΩ or 2 X10KΩ + 1X100KΩ) 1 X Thermocouple (J or K)
		1 X Motor Encoder (Hall Sensor) 2 X Safety Switches (normally closed)
OUTPUT	Insulated	4 X TRIAC 1.2A (Smoke Motor, Ambient Fan, Ignition Heater, Auger) with safety relay to disconnect the loads
		3X Output with Voltage supply = 5V ±10% (Max current = 20mA)
EXPANSIONS	On Board	Backup Battery On Board Expansion
	On Bus	Differential pressure sensor
COMMUNICATION		Type A USB (Firmware / Parameters Update, Parameters / Event Log Download)

2.2 DISPLAY MODULE

DISPLAY TYPE		Graphic LCD
ELECTRICAL FEATU-RES	Supply Voltage	12Vdc ± 10%
DIMENSIONS	B X H X S	167 X 52 X 30mm
CASE MATERIAL	Base	PC ABS
	Mask	PMMA
WORKING TEMPE-RATURE RANGE		-10...70°C

2.3 IR REMOTE CONTROLLER

ELECTRICAL FEATURES	Supply Voltage	2 LR03 (AAA) Alkaline Batteries 24 months life (average)
ENVIRONMENTAL FEATURES	Working Temperature	0...50°C
	Humidity	0…85% RH without condensation
DIMENSIONS	B X H X S	120 X 52 X 29mm
MAX TRANSMISSION DISTANCE		4m
TRANSMISSION TYPE		Unidirectional IR (with beep feedback)

3.1 CONTROL UNIT FASTENING

Fasten the Control Unit to the plaque provided in the pellet stove using the six M3 nylon spacers and twelve M3 nylon screws (supplied with the Control Unit), as shown in the image below.
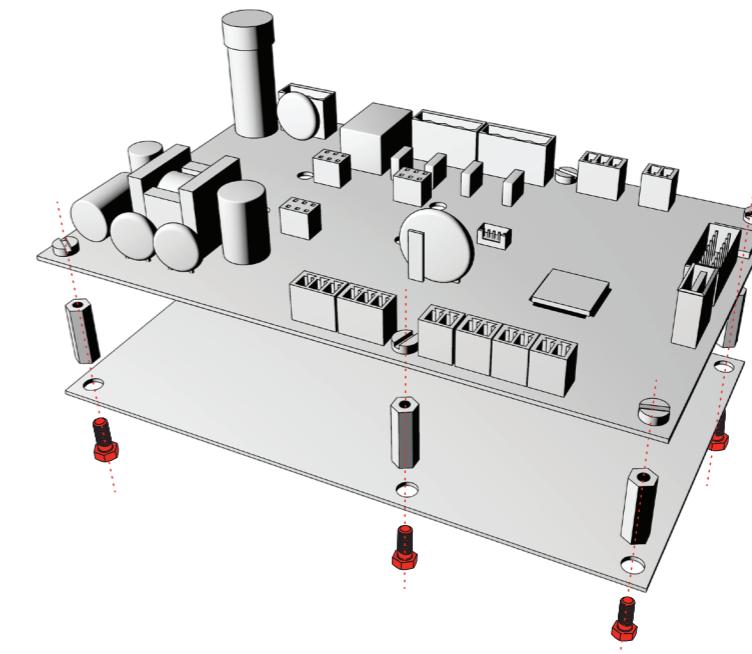
3.2   DISPLAY MODULE FASTENING

In order to secure the Display Module in the compartment provided in the pellet stove, carry out the following steps:

▶ Make sure the Display Module is disconnected from the Control Unit

▶ Open the plastic case of the Display Module (made up of frame and cover) by unscrewing the four screws with a screwdriver as shown in the figure below:

Cover

Frame

▶ Insert the plastic frame (holding the electronic board) into the compartment provided in the pellet stove
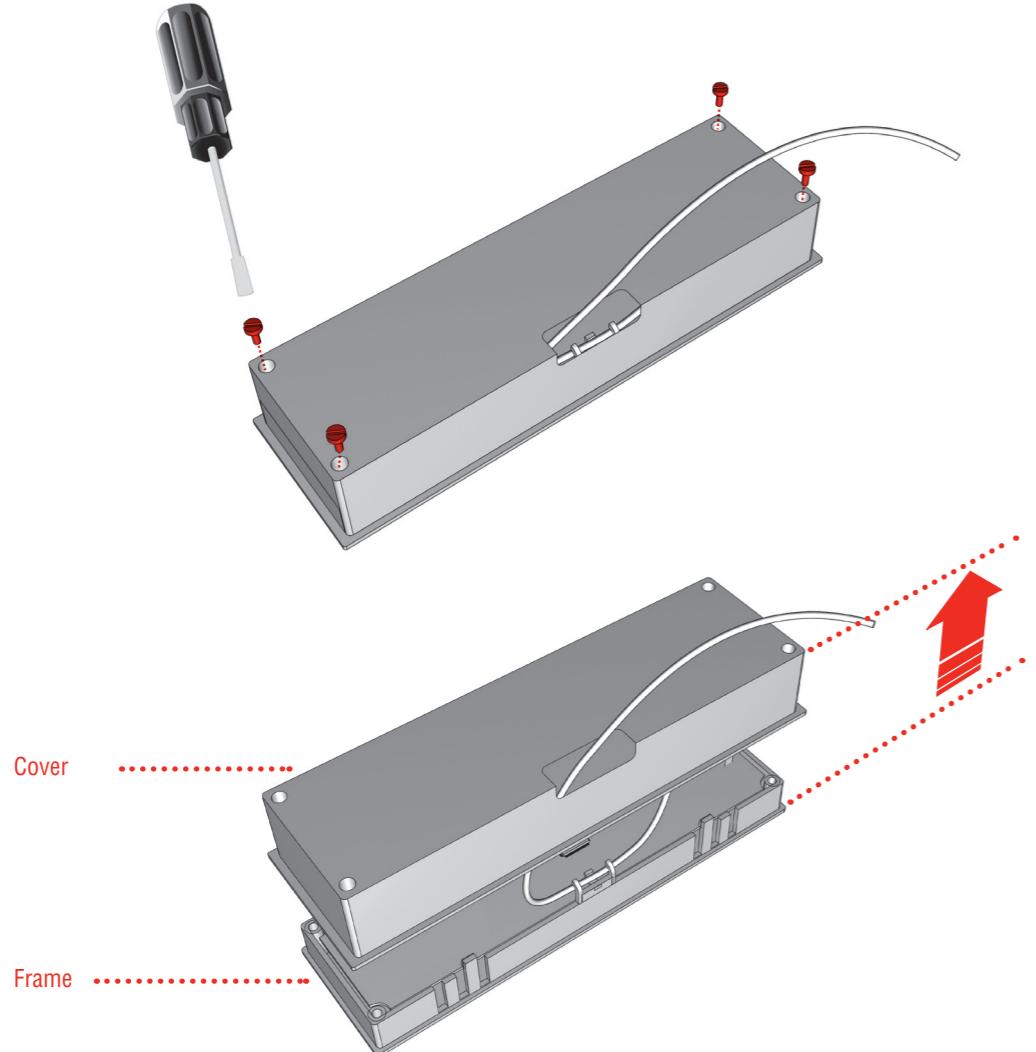
▶ Ensure that the LIN cable is attached to the frame as shown in the figure below:
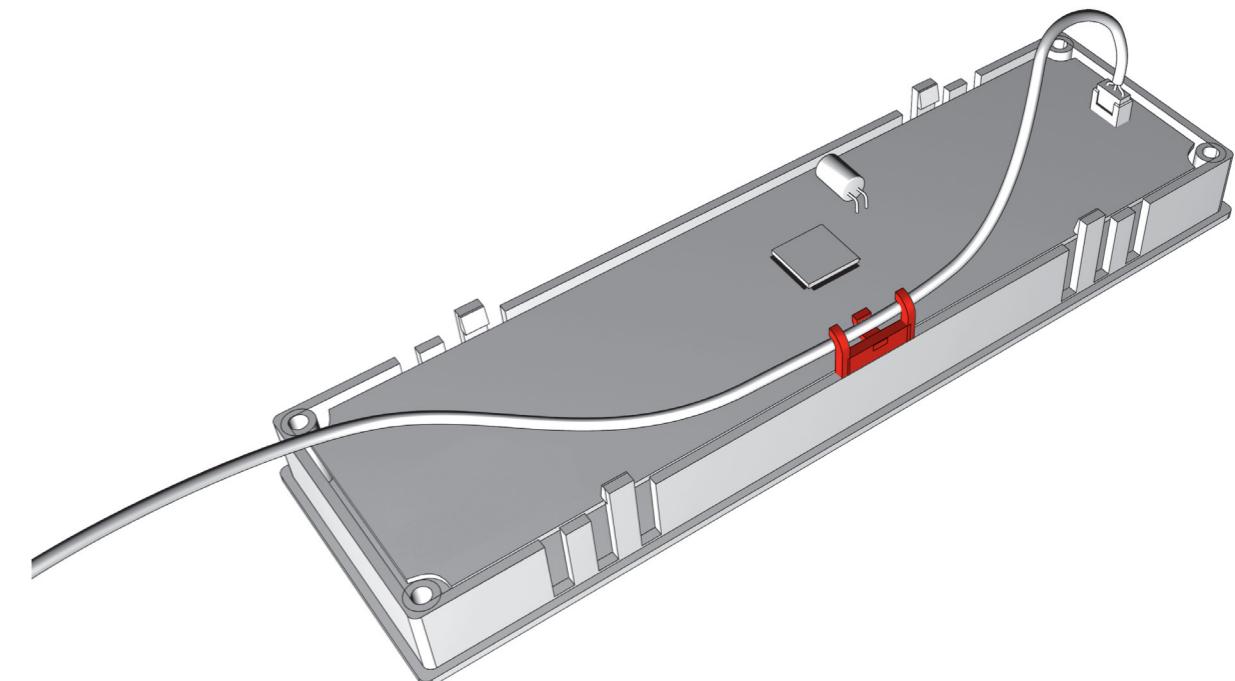
▶ Close the Display Module with its cover by tightening the four screws and making sure to pass the LIN cable through the slot provided, as shown in the figure below:

Slot for threading Lin cable

3.3 WIRING

Part 1

Part 2

Smoke Motor

Power supply
Neutral   Heart   Phase

Ambient Fan

Ignition Heater

Smoke Motor Encoder
Encoder
+ - segnale

3 – poles LIN cable

Display Module

Smoke Thermocouple
- +

+

NTC10KΩ Ambient Temperature Probe
AMB
α

Safety Air Pressure Switch
(normally closed contact)
Δp ⚠
NC
NO

Auger

Safety Bulb Thermostat
(normally closed contact)
°C ⚠

Delta P cable

Delta P

4.1 USER PARAMETERS

MENU LEVEL	SUB LEVEL 1	SUB LEVEL 2	DESCRIPTION	VALUES
	TURN ON/OFF		"TURN ON" is shown when the stove is switched off, and "TURN OFF" when the stove is switched on. Command to turn on or turn off the stove	YES/NO
	MODE		Allows you to set the stove to Manual or Chrono (Weekly Programming) operational mode	MANUAL/CHRONO
	REGULATION		Allows you to set the stove to Comfort Regulation or Thermoregulation	COMFORT/ TEMPERATURE
	ECO FUNCTION		Allows you to enable "Eco" function during Thermoregulation, setting the stove to Turn Off if the room is warm, and back on when it is cold	ON/OFF
PROGRAM		COPY	Copies Chrono Program from one day to another	-
		Sunday...Saturday	Sets the Weekly Programme for every day of the week from Sunday to Saturday, with a 30 minute resolution (every 30 minutes, you can set a Comfort or Temperature value, depending on whether the stove is set to Comfort or Temperature regulation)	-
		COPY	Copies Chrono Program from one day to another	-
	CLEANING ON/OFF		Command to activate manual cleaning mode. During this phase the Smoke Motor is switched to maximum speed for a given time, unless deactivation is carried out in manual mode. Not displayed when the stove is turned on	YES/NO

MENU LEVEL	SUB LEVEL 1	SUB LEVEL 2	DESCRIPTION	VALUES
TOOLS		DATE/HOUR	Allows the user to set the system date and time	-
		ANTIFREEZE	Allows you to enable or disable the antifreeze function. With this function enabled, when the stove is turned off and the temperature read by the Ambient Probe is 1°C lower than the "ANTIFREEZE" technical parameter value (CONFIGURATION sub-menu), the stove is turned on at Comfort level 3, until the ambient temperature exceeds the "ANTIFREEZE" value (CONFIGURATION sub-menu) by 5°C	ON/OFF
		TRIP MODE	When this function is enabled (value other than OFF), and the stove is in Chrono mode at the same time, the stove remains turned off (even if the weekly Programme was due to turn it on) for the set number of days, starting from the following day	OFF-1-15-OFF
		AMBIENT FAN	Allows you to manually set the Ambient Fan speed, from a choice of 5 levels, or to automatically regulate the speed according to Comfort level	LEVEL 1...5 / AUTO
		DUCTED FAN 1	Allows you to manually set the speed of the Ducted Ambient Fan 1, from a choice of 5 levels, or to automatically regulate the speed according to Comfort level, or to disable the Ducted Ambient Fan 1. Displayed only for Single or Double Ducted stove	LEVEL 1...5 / AUTO/OFF
		DUCTED FAN 2	Allows you to manually set the speed of the Ducted Ambient Fan 2, from a choice of 5 levels, or to automatically regulate the speed according to Comfort level, or to disable the Ducted Ambient Fan 2. Displayed only for Double Ducted stove	LEVEL 1...5 / AUTO/OFF
	SETTINGS	BEEP	Enables/disables the beep for setting of parameters	ON/OFF
		LANGUAGE	Sets menu items language	ITALIANO/ ENGLISH/...
		PELLET TYPE	Allows setup of characteristics of the pellet which is being used: the calorific value ("HEAT OF COMBUS.") and the length ("LENGTH"), which can be configured through the menu "SERVICE" ("CONFIGURATION" > "PELLET TYPE")	HEAT OF COMBUS.: LOW, NORMAL, HIGH LENGTH: SHORT, MEDIUM, LONG
		DUCTED SET 1	Set Point Ambient Air temperature in room thermoregulated by Ducted Ambient Fan 1. Parameter displayed only for Single or Dual Ducted stove	15-35°C
		DUCTED SET 2	Set Point Ambient Air temperature in room thermoregulated by Ducted Ambient Fan 2. Parameter displayed only for Dual Ducted stove	15-35°C
		WATER SET	Radiators Water Set Point temperature. Parameter displayed only for Water Regulation with hydro stove	45-70°C
		SERVICE	Menu containing technical parameters, accessed by Service or OEM (with two different passwords)	--

4.2 TECHNICAL PARAMETERS

LOGIN	MAIN MENU	LEVEL 1	LEVEL 2	STRING	DESCRIPTION	RANGE	RES.	UNIT
SERVICE/OEM	TECHNICIAN			Smoke % Variation	Percentage change in Smoke Motor aspiration speed (all phases)	± 10	1	%
		COMFORT 1		Auger OFF	Auger pause time during Working phase in Comfort 1	0-25	0.1	s
				Auger ON	Auger working time during Working phase in Comfort 1	0-25	0.1	s
		COMFORT 2		Auger OFF	Auger pause time during Working phase in Comfort 2	0-25	0.1	s
				Auger ON	Auger working time during Working phase in Comfort 2	0-25	0.1	s
		COMFORT 3		Auger OFF	Auger pause time during Working phase in Comfort 3	0-25	0.1	s
				Auger ON	Auger working time during Working phase in Comfort 3	0-25	0.1	s
		COMFORT 4		Auger OFF	Auger pause time during Working phase in Comfort 4	0-25	0.1	s
				Auger ON	Auger working time during Working phase in Comfort 4	0-25	0.1	s
		COMFORT 5		Auger OFF	Auger pause time during Working phase in Comfort 5	0-25	0.1	s
				Auger ON	Auger working time during Working phase in Comfort 5	0-25	0.1	s
	TEST			IGNITION HEATER	Ignition Heater continuous operation test, Duration = 10s. "Ignition Heater Test" is displayed during the test	NO/YES	--	--
				AUGER	Auger continuous operation test, Duration = 10s. "Auger Test" is displayed during the test	NO/YES	--	--
				AUX RELAY	Relay closure test on On Board Expansion: Duration = 10s. "AUX RELAY Test" is displayed during the test	NO/YES	--	--
				AUX TRIAC	Triac continuous operation test on On Board Expansion: Duration = 10s. "AUX TRIAC Test" is displayed during the test	NO/YES	--	--

LOGIN	MAIN MENU	LEVEL 1	LEVEL 2	STRING	DESCRIPTION	RANGE	RES.	UNIT
SERVICE/OEM	TEST	COMFORT 1		Smoke Motor	Smoke Motor in Comfort 1 test, Duration = 1 min. "Smoke Motor Test" is displayed during the test	NO/YES	--	--
				Ambient Fan	Ambient Fan in Comfort 1 test, Duration = 10s. "Fan Test" is displayed during the test	NO/YES	--	--
				Auger Cycle (1min)	Auger in Comfort 1 test, Duration = 1 minute during which multiple cycles take place. "Auger Cycle 1 min" is displayed during the test	NO/YES	--	--
		COMFORT 2		Smoke Motor	Smoke Motor in Comfort 2 test, Duration = 1min. "Smoke Motor Test" is displayed during the test	NO/YES	--	--
				Ambient Fan	Ambient Fan in Comfort 2 test, Duration = 10s. "Fan Test" is displayed during the test	NO/YES	--	--
				Auger Cycle (1min)	Auger in Comfort 2 test, Duration = 1 minute during which multiple cycles take place. "Auger Cycle 1 min" is displayed during the test	NO/YES	--	--
		COMFORT 3		Smoke Motor	Smoke Motor in Comfort 3 test, Duration = 1 min. "Smoke Motor Test" is displayed during the test	NO/YES	--	--
				Ambient Fan	Ambient Fan in Comfort 3 test, Duration = 10s. "Fan Test" is displayed during the test	NO/YES	--	--
				Auger Cycle (1 min)	Auger in Comfort 3 test, Duration = 1 minute during which multiple cycles take place. "Auger Cycle 1 min" is displayed during the test	NO/YES	--	--
		COMFORT 4		Smoke Motor	Smoke motor in Comfort 4 test, Duration = 1 min. "Smoke Motor Test" is displayed during the test	NO/YES	--	--
				Ambient Fan	Ambient Fan in Comfort 4 test, Duration = 10s. "Fan Test" is displayed during the test	NO/YES	--	--
				Auger Cycle (1min)	Auger in Comfort 4 test, Duration = 1 minute during which multiple cycles take place. "Auger Cycle 1 min" is displayed during the test	NO/YES	--	--
		COMFORT 5		Smoke Motor	Smoke Motor in Comfort 5 test, Duration = 1 min. "Smoke Motor Test" is displayed during the test	NO/YES	--	--
				Ambient Fan	Ambient Fan in Comfort 5 test, Duration = 10s. "Fan Test" is displayed during the test	NO/YES	--	--
				Auger Cycle (1min)	Auger in Comfort 5 test, Duration = 1 minute during which multiple cycles take place. "Auger Cycle 1 min" is displayed during the test	NO/YES	--	--

LOGIN	MAIN MENU	LEVEL 1	LEVEL 2	STRING	DESCRIPTION	RANGE	RES.	UNIT
SERVICE/OEM	TEST	FORCING		TURN OFF	Forces turn off, regardless of phase (unless an alarm is in progress or the stove is already turned off)	NO/YES	--	--
				TURN ON	Forces turn on, regardless of phase (unless an alarm is in progress or the stove is already turned on)	NO/YES	--	--
	DIAGNOSTIC			Fw Version	Displays the Firmware version of the Control Unit and any satellites connected to it (e.g. LCD display)	--	--	--
				Aux Input	Displays temperature/state of NTC inputs and IN AUX related to the On Board Expansion	--	--	--
				Probes	Displays TC, NTC1, NTC2, NTC3 sensors temperature/state	--	--	--
				Analog Input	Displays Analogue Input value	--	--	--
				Digital Input	Displays IN1 and IN2 Digital Inputs state	--	--	--
				Rpm Smoke Motor	Smoke Motor rpm	--	--	--
				Ambient Fan	Displays Ambient Fan % power	--	--	--
				Output Check	Displays power Out feedback state (OUT5: Out Triac On Board Expansion)	--	--	--
				Alarm Input	Displays High Voltage AL1 and AL2 Alarm Inputs	--	--	--
				Diff. Press.	Displays differential pressure of the inward flow at the air intake of the stove (in mPa)	--	--	--
				Set Point	Displays Comfort or Temperature Set Point level set	--	--	--
				Current Comfort	Displays Comfort level in use in the stove	--	--	--
				Curr. State/Mode	Displays current phase and regulation (Comfort or Temperature)	--	--	--

LOGIN	MAIN MENU	LEVEL 1	LEVEL 2	STRING	DESCRIPTION	RANGE	RES.	UNIT
	RESET				Restore factory settings	YES/NO	--	--
SERVICE/OEM	COUNTERS			POWER SUPPLY	Displays total hours electrical power supply to the stove	--	--	hours
				WORKING	Displays total hours working time of the stove	--	--	hours
				LAST SERVICE	Displays working phase hours since last service reset	--	--	hours
				SERVICE RESET	Reset last service hours Counter	YES/NO	--	--
OEM				SERVICE CYCLE	Sets the duration (in hours) before service request (Warning display)	100-10000	100	hours
SERVICE/OEM	CONFIGURATION	PELLET TYPE			Allows matching to the couple of parameters "HEAT OF COMBUS." and "LENGTH" (found in the user menu under "PELLET TYPE"), the variation (in %) of the Auger motor working time and the Smoke Motor speed.	--	--	--
		AMBIENT PROBE		NONE	No Ambient Temperature Probe inserted	--	--	--
				NTC10K	Ambient Temperature Probe type NTC10KΩ used	--	--	--
				THERMOSTAT	External Thermostat used as Ambient Temperature Probe	--	--	--
OEM		STOVE TYPE		Air	Air stove configuration	--	--	--
				Single Ducted	Single Ducted Air stove configuration	--	--	--
				Double Ducted	Double Ducted Air stove configuration	--	--	--
				Hydro	Hydro stove configuration	--	--	--
SERVICE/OEM		AIR SENS. TYPE		NONE	No sensor selected			
				DELTA P	Differential pressure sensor selected, DELTA P menu can be displayed			

LOGIN	MAIN MENU	LEVEL 1	LEVEL 2	STRING	DESCRIPTION	RANGE	RES.	UNIT
	CONFIGURATION	DELTA P		Altitude	Altitude of the area in which the stove is installed	0-3000	1	m
				Diff. Press. Hyst.	Hysteresis to add up (or subtract) to the level of the Differential Pressure Set point set up to obtain the upper (or lower) limit of the optimal range.	0-500	10	mPa
				Diff. Press. C1	Differential Pressure Set Point in Comfort 1	0-20000	10	mPa
				Diff. Press. C2	Differential Pressure Set Point in Comfort 2	0-20000	10	mPa
				Diff. Press. C3	Differential Pressure Set Point in Comfort 3	0-20000	10	mPa
				Diff. Press. C4	Differential Pressure Set Point in Comfort 4	0-20000	10	mPa
				Diff. Press.C5	Differential Pressure Set Point in Comfort 5	0-20000	10	mPa
				Warn. Diff. Press.	Differential Pressure level below which the warning message is shown on the display. If the differential pressure is below half of this value the system switches to alert mode.	0-5000	10	mPa
OEM		SMOKE PROBE		TC J TYPE	Type J Thermocouple used (connected to TC input)	--	--	--
				TC K TYPE	Type K Thermocouple used (connected to TC input)	--	--	--
				NTC100K	NTC100KΩ used (connected to NTC1 input)	--	--	--
		TIMEOUT MENU		USER	Auto menu exit timeout if not used (User access)	2-30	1	min
				SERVICE	Auto menu exit timeout if not used (Service access)	2-180	1	min
SERVICE/OEM		PIN	SERVICE PIN	PIN VIEW	Displays Service PIN	--	--	--
				PIN CHANGE	Change pin for Service Menu access	--	--	--
OEM			OEM PIN	PIN VIEW	Displays OEM pin	--	--	--
				PIN CHANGE	Change pin for OEM Menu access	--	--	--

PARAMETERS

LOGIN	MAIN MENU	LEVEL 1	LEVEL 2	STRING	DESCRIPTION	RANGE	RES.	UNIT
SERVICE/OEM	CONFIGURATION	PELLET SENSE		Present	Set to ON when pellet sensor present	ON/OFF	--	--
				Remaining Time	Indicates remaining operational minutes of the stove at maximum power, when the Pellet Level Sensor (which must be connected to the Control Unit IN2 input) detects a low pellet level. If the stove is not working at full power the remaining number of minutes is taken from this parameter according to the current Comfort level	1-600	1	min
				Auto Turn Off	When set to "ON", automatic turn off of the stove is activated shortly before the pellet tray is emptied	ON/OFF	--	--
		PROBES OFFSET		TC Offset	Offset value read from TC Smoke Probe	± 10	1	°C
				NTC1 Offset	Offset value read from NTC1 Probe	± 10	1	°C
				NTC2 Offset	Offset value read from NTC2 Probe	± 10	1	°C
				NTC3 Offset	Offset value read from NTC3 Probe	± 10	1	°C
				NTC Aux Offset	Offset value read from NTC Probe connected to On Board Expansion	± 10	1	°C
SERVICE/OEM				ANTIFREEZE	Minimum ambient temperature limit for Antifreeze function activation	5-15	1	°C

LOGIN	MAIN MENU	LEVEL 1	LEVEL 2	STRING	DESCRIPTION	RANGE	RES.	UNIT
SERVICE/OEM	EVENTS LOG	EVENTS LIST			Show stored events log, most recent first	--	--	--
		DELETE			Clears events list	YES/NO	--	--
OEM	PROCESS	INIT. CLEANING		Smoke Motor	Smoke Motor aspiration speed during Initial Cleaning phase	600-3000	60	rpm
				Duration	Initial Cleaning phase duration	0-120	5	s
				Ignit. Heater	Ignition Heater activation during Initial Cleaning phase	ON/OFF	--	--
				Interruption	Allows user to turn off the stove during Initial Cleaning phase	ON/OFF	--	--
		STOVE HEATING		Duration	Stove Heating phase duration	0-120	5	s
				Interruption	Allows user to turn off the stove during Stove Heating phase	ON/OFF	--	--
		INITIAL LOAD		Smoke Motor	Smoke Motor aspiration speed during Initial Load phase	600-3000	60	rpm
				Auger Load	Pellet loading duration (Auger in continuous operation) during Initial Load phase	0-250	10	s
				Ignit. Heater	Ignition Heater activation during Initial Load phase	ON/OFF	--	--
				Interruptible	User is able to switch off the stove in the Initial Loading phase	ON/OFF	--	--
		FLAME WAITING		Smoke Motor	Smoke Motor aspiration speed during Waiting Flame phase	600-3000	60	rpm
				Auger OFF	Auger pause time during Waiting Flame phase	0-25	0.1	s

LOGIN	MAIN MENU	LEVEL 1	LEVEL 2	STRING	DESCRIPTION	RANGE	RES.	UNIT
OEM	PROCESS	FLAME WAITING		Auger ON	Auger working time during Waiting Flame phase	0-25	0.1	s
				Duration	Waiting Flame phase duration	0-600	5	s
				Interruption	Allows user to turn off the stove during Waiting Flame phase	ON/OFF	--	--
		LIGHTING ON		Smoke Motor	Smoke Motor aspiration speed during Turn On phase	600-3000	60	rpm
				Ambient Fan	Ambient Fan speed during Turn On phase	0-100%	1	%
				Ignit. Heater	Ignition Heater use during Turn On phase	ON/OFF	--	--
				Auger OFF	Auger pause time during Turn On phase	0-25	0.1	s
				Auger ON	Auger working time during Turn On phase	0-25	0.1	s
				Flame On Delta	Minimum smoke Temperature increase above which the stove is considered turned on compared with the reference level at the end of Waiting Flame phase	0-120	1	°C
				Max Time	Turn On phase maximum duration	1-20	1	min
				Interruption	Allows user to turn off the stove during Turn On phase	ON/OFF	--	--
		STABILIZATION		Smoke Motor	Smoke Motor aspiration speed during Stabilization phase	600-3100	60	rpm
				Ambient Fan	Ambient Fan speed during Stabilization phase	0-100%	1	%
				Ignit. Heater	Ignition Heater activation during Stabilization phase	ON/OFF	--	--
				Auger OFF	Auger pause time during Stabilization phase	0-25	0.1	s
				Auger ON	Auger working time during Stabilization phase	0-25	0.1	s
				Stabiliz. Rate	Temperature increase per minute during Stabilization phase. If increase is not reached the system activates the "ABNORMAL TURN ON" alarm	0-25	1	°C/min
				Duration	Stabilization phase duration	0-4	1	min
				Interruption	Allows user to turn off the stove during Stabilization phase	ON/OFF	--	--

LOGIN	MAIN MENU	LEVEL 1	LEVEL 2	STRING	DESCRIPTION	RANGE	RES.	UNIT
OEM	PROCESS	WORKING	COMFORT 1	Smoke Motor	Smoke Motor aspiration speed during Comfort 1 phase	600-3000	60	rpm
				Ambient Fan	Ambient Fan Percentage Power during Comfort 1 phase	0-100	1	%
				AmbFanTempThrs	Smoke temperature threshold, above which the Ambient Fan is activated at comfort 1, if the fan is in AUTO mode (below this threshold, the fan is switched off)	10-350	1	°C
				Auger OFF	Auger pause time during Working phase Comfort 1	0-25	0.1	s
				Auger ON	Auger working time during working phase Comfort 1	0-25	0.1	s
			COMFORT 2	Smoke Motor	Smoke Motor aspiration speed during working phase Comfort 2	600-3000	60	rpm
				Ambient Fan	Ambient Fan Percentage Power during working phase comfort 2	0-100	1	%
				AmbFanTempThrs	Smoke temperature threshold, above which the Ambient Fan is activated at Comfort 2, if the fan is in AUTO mode	10-350	1	°C
				Auger OFF	Auger pause time during working phase Comfort 2	0-25	0.1	s
				Auger ON	Auger working time during working phase Comfort 2	0-25	0.1	s
			COMFORT 3	Smoke Motor	Smoke Motor aspiration speed during Comfort 3 phase	600-3000	60	rpm
				Ambient Fan	Ambient Fan Percentage Power during working phase Comfort 3	0-100	1	%
				AmbFanTempThrs	Smoke temperature threshold, above which the ambient fan is activated at Comfort 3, if the fan is in AUTO mode	10-350	1	°C
				Auger OFF	Auger pause time during Working phase Comfort 3	0-25	0.1	s
				Auger ON	Auger working time during working phase Comfort 3	0-25	0.1	s

LOGIN	MAIN MENU	LEVEL 1	LEVEL 2	STRING	DESCRIPTION	RANGE	RES.	UNIT
OEM	PROCESS	WORKING	COMFORT 4	Smoke Motor	Smoke Motor aspiration speed during Comfort 4 phase	600-3000	10	rpm
				Ambient Fan	Ambient Fan Percentage Power during Comfort 4 phase	0-100	1	%
				AmbFanTempThrs	Smoke temperature threshold, above which the Ambient Fan is activated at Comfort 4, if the fan is in AUTO mode	10-350	1	°C
				Auger OFF	Auger pause time during working phase Comfort 4	0-25	0.1	s
				Auger ON	Auger working time during working phase Comfort 4	0-25	0.1	s
			COMFORT 5	Smoke Motor	Smoke Motor aspiration speed during Comfort 5 phase	600-3000	60	rpm
				Ambient Fan	Ambient Fan Percentage Power during working phase Comfort 5	0-100	1	%
				AmbFanTempThrs	Smoke temperature threshold, above which the Ambient Fan is activated at Comfort 5, if the fan is in AUTO mode	10-350	1	°C
				Auger OFF	Auger pause time during Working phase Comfort 5	0-25	0.1	s
				Auger ON	Auger working time during working phase Comfort 5	0-25	0.1	s
			THERMOREGUL.	Comfort Boost	Comfort value used on starting stove until it reaches Set Point + Sup Differential	1-5	--	--
				Inf Differential	Value to subtract from Set Point temperature to reach temperature limit below which Comfort is set to "Maximum Comfort"	0,1-5	0.1	°C
				Max Comfort	Heating comfort in relation to Inf Differential	1-5	--	--
				Sup Differential	Value to add to Set Point temperature to reach temperature limit above which Comfort is set to "Minimum Comfort"	0,1-5	0.1	°C
				Min Comfort	Maintenance comfort in relation to Sup Differential	1-5	--	--

LOGIN	MAIN MENU	LEVEL 1	LEVEL 2	STRING	DESCRIPTION	RANGE	RES.	UNIT
OEM	PROCESS	WORKING	AUTOM.CLEAN.	Period	Interval between Brazier Cleaning phases	0-180	1	min
				Duration	Brazier Cleaning duration	10-240	5	s
		LIGHTING OFF		Smoke Motor	Smoke Motor aspiration speed during Turn Off phase	600-3000	10	rpm
				Ambient Fan	Ambient Fan Percentage Power during controlled Turn Off phase (System in Alarm)	0-100	1	%
				Smoke Temperat.	Smoke temperature threshold below which stove is considered turned off, during Turn Off phase or in alarm during Working phase ("ABNORMAL FLAME OFF")	10-120	1	°C
				Duration	Minimum Turn Off phase duration (when the smoke temperature is above the value set in "Temp. Safety Temp")	0-30	1	min
				Safety Temp.	Temperature threshold above which the manual cleaning procedure is activated, but scrolling Warning message "HIGH SMOKE TEMPERATURE" is activated. During Turn On phase, if the smoke temperature exceeds this value, Turn Off phase will have a minimum duration (as set in the "Duration" parameter in the same menu)	10-120	1	°C
		RELIGHTING		Smoke Motor Rel.	Smoke Motor aspiration speed in Stove Heating, Initial Load and Waiting Flame phases when the stove is turned on during a "warm" stove relighting event.	600-3000	60	rpm
				Smoke Temp. Rel.	Smoke temperature threshold below which stove is considered turned off during a "warm" stove relighting event	10-120	1	°C
		ALARMS		Smoke Temp. Max	Maximum smoke temperature, above which the "TOO HIGH SMOKE TEMPERATURE" warning is activated	100-350	1	°C
				BlackOut Time	Minimum time to keep the stove in Working phase after a Black Out	1-240	1	s
		DEHUMIDIFICAT.		Enable	Ability to exclude Dehumidification function	ON/OFF	--	--
				Interruption	Allows user to stop Dehumidification, passing directly to ignition using a long push of the display knob	ON/OFF	--	--

LEGEND: **OEM**   Menu accessible only by OEM with specific password   **SERVICE/OEM**   Menu accessible by OEM or Service with two different passwords

5.1   ALARMS

FLAME NOT PRESENT

SHOWN ON DISPLAY (SCROLLING)	**"FLAME NOT PRESENT"**
ABNORMAL DESCRIPTION	During Turn On phase the smoke temperature must not increase by a value equal to "Flame On Delta" (LIGHTING ON submenu) within a time equal to "Max Time" (LIGHTING ON submenu)
ACTIONS TAKEN	During the Alarm phase: Ignition Heater OFF, Auger OFF, Smoke Motor to maximum speed, until stove cold (smoke temperature below threshold of "Smoke Temperat." in LIGHTING OFF submenu)
USER RESET	Display knob depressed for 5s
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"NO FLAME"

ABNORMAL LIGHTING

SHOWN ON DISPLAY (SCROLLING)	**"ABNORMAL LIGHTING"**
ABNORMAL DESCRIPTION	In the Stabilization phase, smoke temperature does not increase or increases with a rate lower than the value set in the "Stabiliz. Rate" parameter in the STABILIZATION submenu
ACTIONS TAKEN	During the Alarm phase: Ignition Heater OFF, Auger OFF, Smoke Motor to maximum speed, until stove cold (smoke temperature below threshold of "Smoke Temperat." in LIGHTING OFF submenu)
USER RESET	Display knob depressed for 5s
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"ABNORM. FIRING"

ABNORMAL FLAME OFF

SHOWN ON DISPLAY (SCROLLING)	**"ABNORMAL FLAME OFF"**
ABNORMAL DESCRIPTION	In working phase the smoke temperature falls below the alarm threshold (Smoke Temperat." in LIGHTING OFF submenu)
ACTIONS TAKEN	During the Alarm phase: Ignition Heater OFF, Auger OFF, Smoke Motor to maximum speed, until stove cold (smoke temperature below "Smoke Temperat." threshold in LIGHTING OFF submenu)
USER RESET	Display knob depressed for 5s
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"FLAME OFF KO"

STOVE OVERHEATING

SHOWN ON DISPLAY (SCROLLING)	**"STOVE OVERHEATING"**
ABNORMAL DESCRIPTION	Bulb thermostat tripped (open contact)
ACTIONS TAKEN	During the Alarm phase: Ignition Heater OFF, Auger OFF, Smoke Motor to maximum speed, until stove cold (smoke temperature below threshold of "Smoke Temperat." in LIGHTING OFF submenu)
USER RESET	Bulb Thermostat manual reset
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"STOVE OVERHEATING"

TOO HIGH SMOKE TEMPERATURE

SHOWN ON DISPLAY (SCROLLING)	**"TOO HIGH SMOKE TEMPERATURE"**
ABNORMAL DESCRIPTION	Smoke temperature above maximum temperature ("Smoke Temp. Max", in the ALARMS submenu) and timeout expired (timeout duration displays "HIGH SMOKE TEMPERATURE", see warnings list)
ACTIONS TAKEN	During the Alarm phase: Ignition Heater OFF, Auger OFF, Smoke Motor to maximum speed, until stove cold (smoke temperature below threshold of "Smoke Temperat." in LIGHTING OFF submenu)
USER RESET	Display knob depressed for 5s
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"SMOKE T HIGH"

OBSTRUCTED CHIMNEY

SHOWN ON DISPLAY (SCROLLING)	**"OBSTRUCTED CHIMNEY"**
ABNORMAL DESCRIPTION	Air Pressure Switch tripped (open contact)
ACTIONS TAKEN	During the Alarm phase: Ignition Heater OFF, Auger OFF, Smoke Motor to maximum speed, until stove cold (smoke temperature below threshold of "Smoke Temperat." in LIGHTING OFF submenu)
USER RESET	Display knob depressed for 5s
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"CHIMNEY OBSTR."

SMOKE MOTOR KO

SHOWN ON DISPLAY (SCROLLING)	**"SMOKE MOTOR KO"**
ABNORMAL DESCRIPTION	Damaged Smoke Motor Output (delayed alarm)
ACTIONS TAKEN	During the Alarm phase: Ignition heater OFF, Auger OFF
USER RESET	Display knob depressed for 5s
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"SMOKE OUT DAMAGED"

SMOKE MOTOR KO

SHOWN ON DISPLAY (SCROLLING)	**"SMOKE MOTOR KO"**
ABNORMAL DESCRIPTION	Smoke Motor blocked (delayed alarm)
ACTIONS TAKEN	During the Alarm phase: Ignition heater OFF, Auger OFF
USER RESET	Display knob depressed for 5s
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"SMOKE M BLOCKED"

SMOKE MOTOR KO

SHOWN ON DISPLAY (SCROLLING)	**"SMOKE MOTOR KO"**
ABNORMAL DESCRIPTION	Smoke Motor phases disconnected (delayed alarm)
ACTIONS TAKEN	During the Alarm phase: Ignition heater OFF, Auger OFF
USER RESET	Display knob depressed for 5s
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"SMOKE M DISC."

AMBIENT FAN KO

SHOWN ON DISPLAY (SCROLLING)	**"AMBIENT FAN KO"**
ABNORMAL DESCRIPTION	Ambient Fan phases disconnected or Ambient Fan output damaged (delayed alarm)
ACTIONS TAKEN	During the Alarm phase: Ignition Heater OFF, Auger OFF, Smoke Motor to maximum speed, until stove cold (smoke temperature below threshold of "Smoke Temperat." in LIGHTING OFF submenu)
USER RESET	Display knob depressed for 5s
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"AIR MOTOR KO"

IGNITION HEATER KO

SHOWN ON DISPLAY (SCROLLING)	**"IGNITION HEATER KO"**
ABNORMAL DESCRIPTION	Ignition Heater disconnected or Ignition Heater output damaged (delayed alarm)
ACTIONS TAKEN	During the Alarm phase: Ignition Heater OFF, Auger OFF, Smoke Motor to maximum speed, until stove cold (smoke temperature below threshold of "Smoke Temperat." in LIGHTING OFF submenu)
USER RESET	Display knob depressed for 5s
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"IGNIT. HEAT. KO"

AUGER KO

SHOWN ON DISPLAY (SCROLLING)	**"AUGER KO"**
ABNORMAL DESCRIPTION	Auger phases disconnected or Auger damaged (delayed alarm)
ACTIONS TAKEN	All loads are disconnected (Safety Relay open)
USER RESET	Display knob depressed for 5s
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"AUGER KO"

SMOKE PROBE KO

SHOWN ON DISPLAY (SCROLLING)	SMOKE PROBE KO
ABNORMAL DESCRIPTION	Smoke Probe fault in Working phase
ACTIONS TAKEN	During the Alarm phase: Smoke Motor OFF, Ambient Fan OFF, Ignition Heater OFF, Auger OFF
USER RESET	Display knob depressed for 5s
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"SMOKE PROBE KO"

ELECTRONIC BOARD KO

SHOWN ON DISPLAY (SCROLLING)	**"ELECTRONIC BOARD KO"**
ABNORMAL DESCRIPTION	Communication loss to Control Unit internal bus
ACTIONS TAKEN	All loads are disconnected (Safety Relay open)
USER RESET	Display knob depressed for 5s
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"ELECTRONIC KO"

POWER BLACKOUT: WAIT STOVE COOLING

SHOWN ON DISPLAY (SCROLLING)	**"POWER BLACKOUT: WAIT STOVE COOLING"**
ABNORMAL DESCRIPTION	Electrical network loss with stove on
ACTIONS TAKEN	If when the mains power supply returns the smoke temperature exceeds the threshold "Smoke Temperat. in the LIGHTING OFF submenu and the power loss duration is less than the parameter BlackOut Time in the ALARMS submenu, the stove will stay in the last phase before the Black Out. Otherwise, the system performs a controlled shutdown of the stove (Ignition Heater and Auger OFF, Smoke Motor to maximum) until the stove is cold. Once the stove is cold (and the minimum time set in "Duration" in the LIGHTING OFF submenu has expired), the message "POWER BLACKOUT - EMPTY BRAZIER" appears
USER RESET	Display knob depressed for 5s
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"NO POWER SUPPLY"

ELECTRONIC BOARD OVERHEATING

SHOWN ON DISPLAY (SCROLLING)	**"ELECTRONIC BOARD OVERHEATING"**
ABNORMAL DESCRIPTION	Control Unit temperature greater than safety threshold (non-configurable value)
ACTIONS TAKEN	During the Alarm phase: Ignition Heater OFF, Auger OFF, Smoke Motor to maximum speed, until stove cold (smoke temperature below threshold of "Smoke Temperat." in LIGHTING OFF submenu)
USER RESET	Display knob depressed for 5s
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"T ELECTRONIC HI"

AIR FLOW LACKING

SHOWN ON DISPLAY (SCROLLING)	**"AIR FLOW LACKING"**
ABNORMAL DESCRIPTION	Differential Pressure read by the sensor below half of value set in "Warn. Diff. Press." parameter
ACTIONS TAKEN	During the Alarm phase: Ignition Heater OFF, Auger OFF, Smoke Motor to maximum speed, until stove cold (smoke temperature below threshold of "Smoke Temperat." in LIGHTING OFF submenu)
USER RESET	Display knob depressed for 5s
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"NO AIR FLOW"

For all:

INTERMITTENT BEEP ALARM	YES

5.2 WARNINGS

HIGH SMOKE TEMPERATURE

SHOWN ON DISPLAY (SCROLLING)	"HIGH SMOKE TEMPERATURE"
ABNORMAL DESCRIPTION	Smoke temperature above threshold ("Smoke Temp. Max")
ACTIONS TAKEN	Comfort automatically set to minimum
USER RESET	Display knob short depress
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	---

AMBIENT PROBE KO

SHOWN ON DISPLAY (SCROLLING)	"AMBIENT PROBE KO"
ABNORMAL DESCRIPTION	Ambient Temperature Probe faulty or disconnected
ACTIONS TAKEN	If enabled, Thermoregulation or Antifreeze functions are automatically disabled
USER RESET	Display knob short depress
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"AIR PROBE KO"

SERVICE REQUEST

SHOWN ON DISPLAY (SCROLLING)	"SERVICE REQUEST"
ABNORMAL DESCRIPTION	When you provide power supply the system notices that the stove working hours number is larger than SERVICE LIFECYCLE parameter value in the COUNTERS submenu
ACTIONS TAKEN	---
USER RESET	Display knob short depress
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"SERVICE" REQUEST."

THERMOSTAT ON NTC2 OUT OF RANGE

SHOWN ON DISPLAY (SCROLLING)	"THERMOSTAT ON NTC 2 OUT OF RANGE"
ABNORMAL DESCRIPTION	Thermostat voltage supply in intake NTC2 out of range
ACTIONS TAKEN	Comfort Mode automatically set and Antifreeze (if already enabled) is disabled
USER RESET	Display knob short depress
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	OUT TH NTC2 KO

AIR FLOW SENSOR KO

SHOWN ON DISPLAY (SCROLLING)	"DELTA P SENSOR KO"
ABNORMAL DESCRIPTION	Stove configured with Delta P Sensor present but the sensor is not communicating with the Control Unit
ACTIONS TAKEN	System automatically configured without Delta P Sensor
USER RESET	Display knob short depress
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"DELTA P KO"

OBSTRUCTED BRAZIER

SHOWN ON DISPLAY (SCROLLING)	"OBSTRUCTED BRAZIER
ABNORMAL DESCRIPTION	Differential Pressure read by the sensor below the value set in "Pres.Diff.Warn." parameter
ACTIONS TAKEN	Smoke Motor at maximum speed (set in the "Smoke Motor" parameter in the "LIGHTING OFF" submenu)
USER RESET	Display knob short depress
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	BRAZIER OBSTR."

REMAINING TIME <NUMBER OF MINUTES>

SHOWN ON DISPLAY (SCROLLING)	"REMAINING TIME <NUMBER OF MINUTES>"
ABNORMAL DESCRIPTION	If Present parameter in the PELLET SENS. is set to ON and is connected to a Pellet Level Sensor on IN2 on the Control Unit, this warning is activated when the sensor detects a low pellet level. <number of minutes> shows the remaining operational minutes for the stove and updates automatically
ACTIONS TAKEN	---
USER RESET	Display knob short depress
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	---

6.1 TURNING ON

Once secured, wired and powered correctly, in order to start the Turn On phase of the stove you must enter the USER MENU by pushing the display knob and positioning the cursor on the first entry "TURN ON".
It is then necessary to push the knob again, and select "YES" and depress the display knob once more.

Alternatively, you may turn on with a long push (5s) of the display knob.
This will start the Turn On phase in the system, which is accompanied by an audible notification (beep) and the scrolling display shows "TURN ON IN PROGRESS - PLEASE WAIT".

6.2 TURNING ON CONDITIONS

The system allows two turn on conditions:

- Turning on with stove *"cold"* (stove is in OFF state, or the minimum smoke temperature detected is lower than the value set in the parameter *"Smoke Temperat."* in the submenu LIGHTING OFF and the stove can be considered cold)

- Turning on with stove *"warm"* (user relights stove, setting the parameter "TURN ON" to "YES", when the Turn Off phase is in progress in the stove)

6.2.1 Turning on with "Cold" stove

This stage consists of the following subphases in turn:

▷ **1. INIT. CLEANING:**
Phase during which the Smoke Motor (to carry out initial cleaning of the Brazier) and the Ignition Heater are activated. The Ignition Heater can be disabled by selecting "OFF " in the parameter "Ignit. Heater" in the INIT. CLEANING submenu.
All the parameters for this phase are in the "INIT. CLEANING" submenu

▷ **2. STOVE HEATING:**
Phase during which the Ignition Heater only has been activated to heat the brazier before entering the Initial Load phase.
The parameters for this phase are in the submenu "STOVE OVERHEATING"

▷ **3. INITIAL LOAD:**
Phase during which the Auger has also been continuously enabled, in order to preload the Brazier with an initial layer of pellets before entering the Flame Waiting phase.
The parameters for this phase are in the "INITIAL LOAD" submenu

▷ **4. FLAME WAITING:**
Phase during which the Smoke Motor and Ignition Heater only are activated, in order to speed up the combustion process in the following phase.
The parameters for this phase are in the "WAITING FLAME" submenu

▷ **5. LIGHTING ON:**
Phase in which the Smoke Motor, the Auger and the Ignition Heater are active, in order to aid combustion initiation and the consequent flame presence. This phase completes when the difference between the smoke temperature at the beginning of this phase, and the current smoke temperature, exceeds the threshold set in parameter "Flame On Delta" in submenu LIGHTING ON. If this threshold is not exceeded within a time equal to the value set in the parameter "Max Time" in the LIGHTING ON submenu, the system goes into Alarm state, with the scrolling display message "FLAME NOT PRESENT". When the smoke temperature exceeds the threshold set in the parameter "AmbFanTempThrs" in the COMFORT 1 submenu, the Ambient Fan is also activated.
The parameters for this phase are in the "LIGHTING ON" submenu

▷ **6. STABILIZATION:**
Temporal phase for flame stabilization, in which the Ignition Heater is disabled whilst the Smoke Motor and Auger remain enabled. During this phase the smoke temperature increase is monitored every minute. If this increase at a rate lower than the value set in the parameter "Stabiliz. Rate" in the STABILIZATION submenu, the system goes into the alarm "ABNORMAL LIGHTING".
When the smoke temperature exceeds the threshold set in the parameter "AmbFanTempThrs" in the COMFORT 1 submenu, the Ambient Fan is also activated.
The parameters for this phase are in the submenu STABILIZATION"

6.2.2 Turning On with "Warm" stove

Turning on with stove "warm" takes place when the stove is turned on again (see para. 6.1) when it is in Lighting Off phase. In this case the Lighting Off phase completes when the smoke temperature is below the value set in the parameter "Smoke Temp. Rel." in the RELIGHTING submenu and a given time has expired (parameter "Duration" in LIGHTING OFF submenu). Once the Lighting Off phase is complete, the system repeats all phases for Turn On with stove "cold" (see para. 6.2.1), with the difference that during the phases "Stove Heating", "Initial Load" and "Waiting Flame" phases the smoke motor is activated at the speed set in the parameter "Smoke Motor Rel." in the RELIGHTING submenu.

Left diagram

PARAMETER *Smoke Temp. Max"* (ALARMS SUBMENU)

SMOKE TEMPERATURE °C

PARAMETER *"AmbFanTempThrs"* (COMFORT 1 SUBMENU)

PARAMETER *"FLAME ON DELTA"* (SUBMENU' LIGHTING ON)

AUGER — ON / OFF

IGNITION HEATER — ON / OFF

AMBIENT FAN — ON / OFF

SMOKE MOTOR — ON / OFF

PARAMETER *"Smoke Motor"* (LIGHTING OFF SUBMENU)

TEMPORAL PHASE | TEMPORAL PHASE | TEMPORAL PHASE | TEMPORAL PHASE | TEMPORAL PHASE | C1 | C2 | C3 | C4 | C5

OFF | INIT. CLEANING | STOVE HEATING | INITIAL LOAD | WAITING FLAME | LIGHTING ON | STABILIZATION | WORKING

TURN ON COMMAND

Right diagram

PARAMETER *Smoke Temp. Max"* (ALARMS SUBMENU)

SMOKE TEMPERATURE °C

PARAMETER *AmbFanTempThrs"* (COMFORT 1 SUBMENU)V

PARAMETER *"FLAME ON DELTA"* (SUBMENU' LIGHTING ON)

PARAMETER *Smoke Temp. Rel"* (RELIGHTING SUBMENU)

AUGER — ON / OFF

IGNITION HEATER — ON / OFF

AMBIENT FAN — ON / OFF

SMOKE MOTOR — ON / OFF

PARAMETER *"Smoke Motor"* (LIGHTING OFF SUBMENU)

PARAMETER *Smoke Motor Rel.."* (RELIGHTING SUBMENU)

TEMPORAL PHASE | TEMPORAL PHASE | TEMPORAL PHASE | TEMPORAL PHASE | TEMPORAL PHASE | C1 | C2 | C3 | C4 | C5

LIGHTING OFF | INIT. CLEANING | STOVE HEATING | INITIAL LOAD | WAITING FLAME | LIGHTING ON | STABILIZATION | WORKING

TURN ON COMMAND

6.2.3 Stove management after Blackout event

(PHASE AVAILABLE ONLY WITH BATTERY INSERTED)

Should an electrical power blackout occur when the stove is not switched off (stove OFF), when the power supply system is reconnected, the system will read the smoke temperature and time of the electrical network failure (blackout time). If the smoke temperature is greater than the parameter *"Smoke Temperat."* in the LIGHTING OFF submenu (or the stove is still warm) and the power loss duration is less than the parameter *"BlackOut Time"* in the ALARMS submenu, the system will stay in the last phase it was in before the power failure.

In the event however that the stove is still warm, but the power loss duration is greater than the *"BlackOut Time"* (or the flame is no longer present in the brazier) the stove will enter the controlled turn off state, activating the Smoke Motor at maximum and shows the scrolling display "POWER BLACKOUT: WAIT STOVE COOLING".

This state persists until the stove becomes cold (or the smoke temperature falls below the threshold set in the parameter *"Smoke Temperat."* in submenu LIGHTING OFF and a minimum interval has passed, which is equal to *"Duration"* in submenu LIGHTING OFF), following which the display shows the message "POWER BLACKOUT: EMPTY BRAZIER".
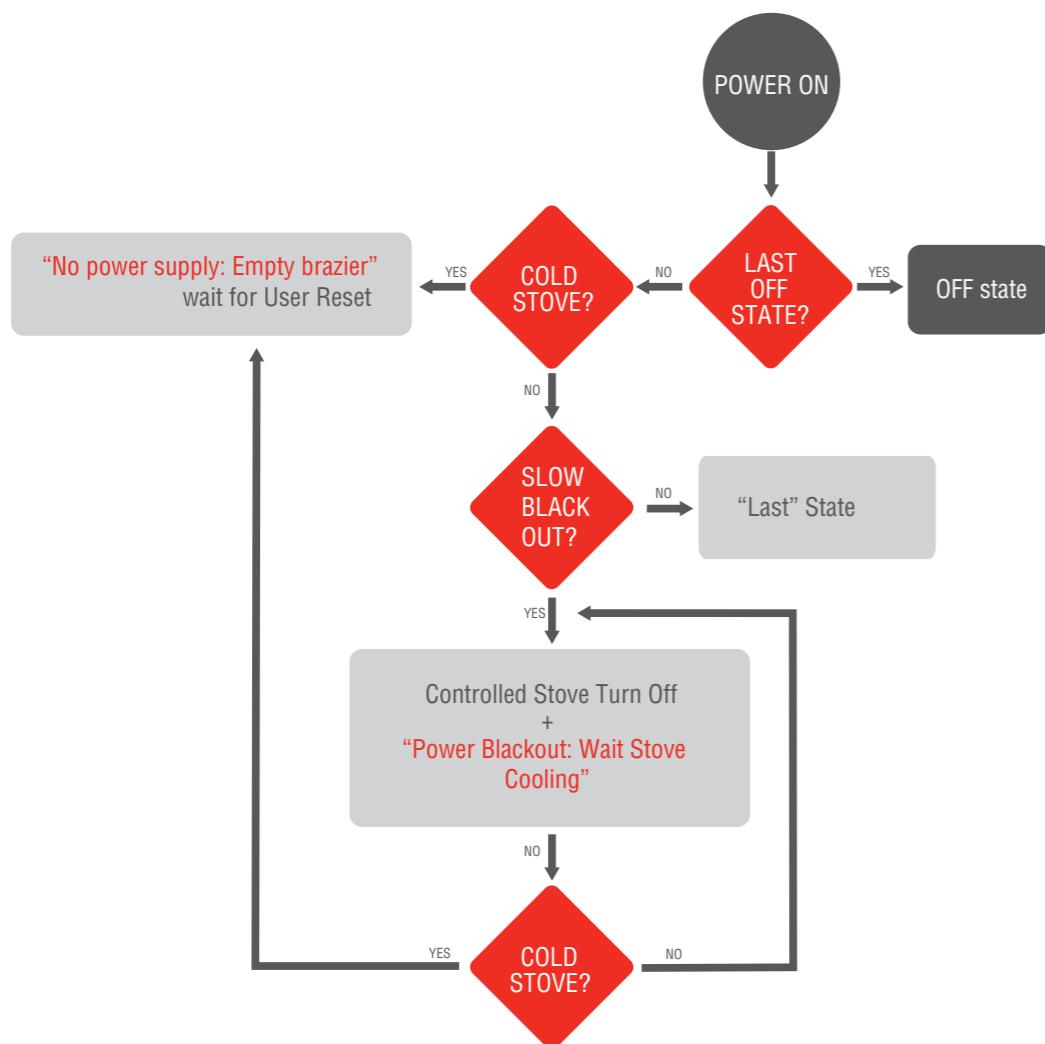
6.3 WORKING

The system allows you to manage the stove with the following two regulation modes:
- Comfort
- Thermoregulation

6.3.1 Comfort

To select Comfort mode, you must access the User Menu, menu item "REGULATION" and select "COMFORT".
In this mode the stove is set to fixed power regardless of the ambient temperature. In this way, the system ensures constant Comfort, maintaining the speeds of the Smoke Motor and Ambient Fan at a given value, as well as the duty cycle of the Auger.
Five Comfort levels are available, which can be selected as follows:
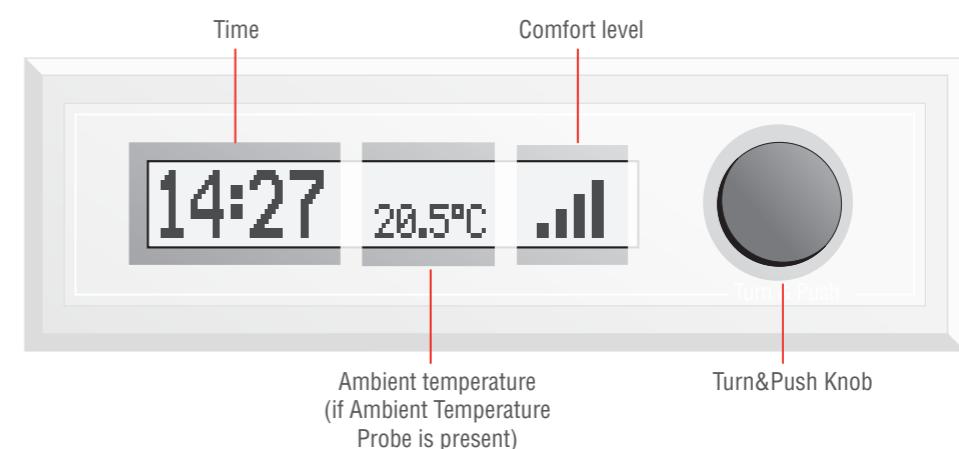
- Go to the IDLE menu in the display (see above Figure)
- Depress the display knob: the last bar begins to flash, and you may change the Comfort level
- Change Comfort level by turning the display knob
- Select the level chosen by pushing the display knob once more (the final bar stops flashing and a confirmation beep is generated). *If no new Comfort level is selected, after 10s the previous level is restored and the bar stops blinking.*

NB: When in this state, if you wish to access the User Menu, you must depress the knob twice

You can set the relative parameters (Smoke Motor speed, Ambient Fan speed, and Auger duty cycle) for each Comfort level in the submenus COMFORT 1-5 (OEM level).

6.3.2 Thermoregulation

To select Thermoregulation mode, you must access the User Menu, menu item "REGULATION" and select "TEMPE-
RATURE".
Thermoregulation must be managed in two distinct modes, according to the value set in the parameter
"AMBIENT PROBE" in the submenu CONFIGURATION:

- NTC10K: in this case an NTC10KΩ temperature sensor must be connected to input NTC2 and the stove will mo-
  dulate the power according to the temperature read by the Ambient Temperature Probe
- THERMOSTAT: in this case an ambient temperature thermostat must be connected to input NTC2 on the Control
  Unit and the stove will modulate the power according to the thermostat state.
  The following shows the correct configuration of the thermostat wiring in the Control Unit

Ambient
thermostat
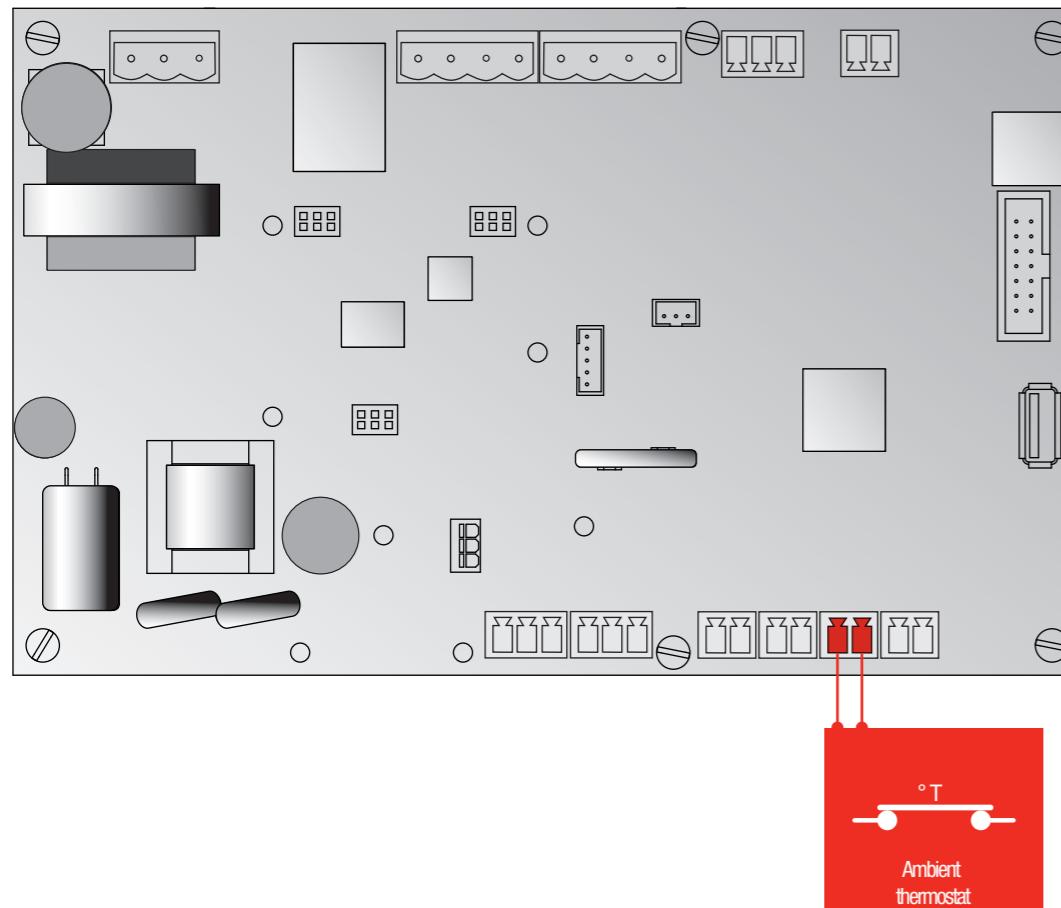
NB: The Ambient Thermostat must be wired in such a way that the contact closes when the ambient temperature
falls below the temperature threshold set

6.3.2.1 Thermoregulation with NTC10KΩ Ambient Temperature Probe

In this mode, the stove power is modulated in such a way as to maintain the ambient temperature around the Set
Point temperature. You may set this range in the THERMOREGUL. submenu under the following menu items:

- *"Sup Differential"* : Offset to be added to Set Point temperature to find the upper limit above which the Comfort
  level stored in the "Min Comfort" parameter will be set.

- "Inf Differential" : Offset to be subtracted from Set Point temperature to find the lower limit, below which the
Comfort level stored in the "Max Comfort" or "Comfort Boost" (in the event that Working phase has just been reached)
parameters will be set

AMBIENT TEMPERATURE °C

Sup Differential"
(THERMOREGUL. SUBMENU)

"Inf Differential"
(THERMOREGUL. SUBMENU)   AMBIENT TEMPERATURE SET POINT

AUGER   ON
          OFF

AMBIENT FAN

SMOKE MOTOR

"Comfort Boost"
(THERMOREGUL. SUBMENU)   "Min Comfort"
(THERMOREGUL.
SUBMENU)   "Max Comfort"
(THERMOREGUL.
SUBMENU)
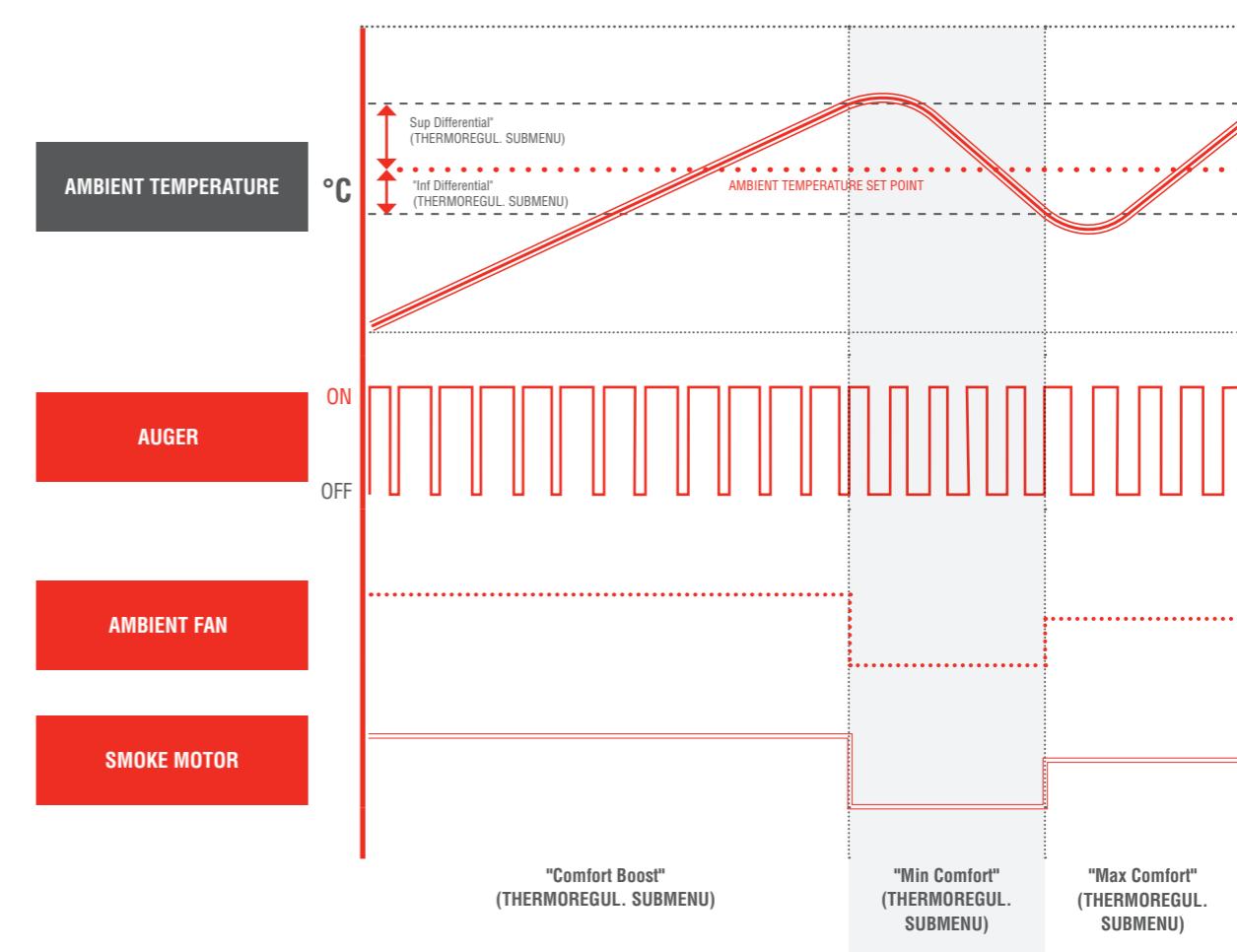
Once the stove is in Working phase, you may change the Temperature Set Point as follows:

- Go to the IDLE menu in the display (see below Figure)

Thermoregulation Activated Icon

Set Point Temperature

- Depress the display knob: the Set Point temperature begins to flash, and you may change the value

- Change the Set Point temperature, by turning the display know (the Set Point temperature resolution is 0.5°C)

- Select the Set Point by pushing the display knob once more (the Set Point temperature stops flashing). If no new Set Point level is selected, after 10s the previous entry is restored and the temperature stops blinking.

6.3.2.2. Thermoregulation with Ambient Thermostat

Operation is similar to Thermoregulation with Ambient Temperature Probe NTC10KΩ, with the variation that the power levels modulation is carried out according to the *ON/OFF* state of the ambient thermostat.
In this mode, in the display IDLE state, the display will show a string indicating the thermostat state.

6.3.2.3 ECO Function

Setting parameter "ECO FUNCTION" in the User Menu to "ON" thermoregulation will be managed in "ECO"mode: when the ambient temperature exceeds the upper temperature limit the stove will be turned off, while when it falls below the lower limit, it will be turned on at the Comfort level stored in "Max Comfort".
Thermoregulation is managed in "ECO" mode, also where an Ambient Thermostat is used in place of the Ambient Temperature Probe NTC10KΩ.

6.3.3 Too High Smoke Temperature Event

If during the working state the temperature read by the smoke probe exceeds the value set in the parameter *"Smoke Temp. Max"* in the ALARMS submenu, the system will automatically activate the minimum comfort level (submenu COMFORT 1) and at the same time display the warning message "HIGH SMOKE TEMPERATURE".
If the smoke temperature falls below the alarm threshold again, then the previous comfort level will automatically be restored, and the warning message will be deactivated. If instead the smoke overtemperature condition persists for over 5 minutes, the system will move in to Alarm state, displaying the warning message "TOO HIGH SMOKE TEMPERATURE".

6.3.4 Automatic Cleaning

During Working phase, the stove can be set to periodically carry out automatic brazier cleaning. In this state the Smoke Motor turns at maximum speed (corresponding to value set in the parameter *"Smoke Motor"* in the "LIGHTING OFF" submenu).
The duration and interval of automatic cleaning can be set using the *"Duration"* and *"Interval"* parameters respectively, in the submenu AUTOM. CLEANING.

6.3.5 Chrono Mode

The system can be set to Chrono mode, in which you may program the stove weekly, in order that it turns on and off at certain times, with a certain Comfort level (or Set Point Temperature, when in Thermoregulation). In particular, for each day of the week, you can programme the stove with a minimum time range equal to 30 minutes. To select Chrono mode, you must access the User Menu, menu item "MODE" and select "CHRONO".
Refer to the images below for some examples of Chrono mode operation.

Next Turn ON Time

Chrono Mode Icon

Next Turn OFF Time

Current Comfort Level
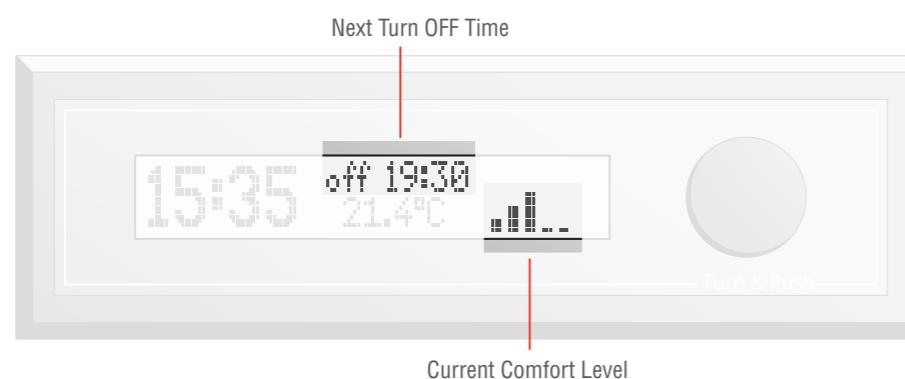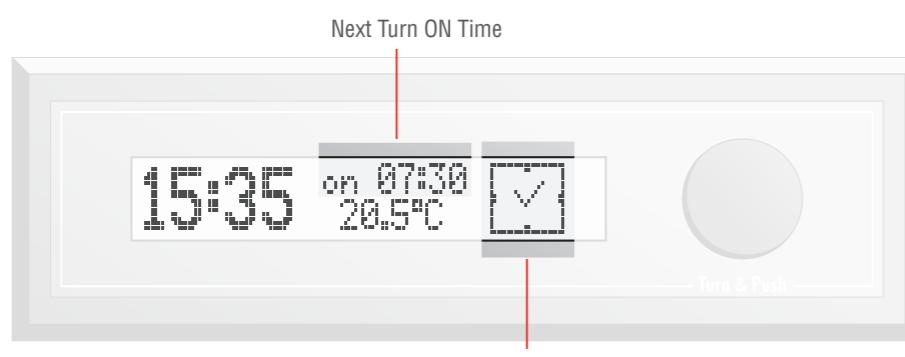
6.3.5.1 Weekly Programming

To carry out weekly programming, please refer to the following sequence:

Access the menu "PROGRAM"

Browse through the days of the week by turning the knob on the display to select the required day

Access the day of the week by depressing the knob

Place the cursor on the initial programming time, by rotating the knob and selecting by depressing

Place the cursor on the end programming time, by rotating the knob and selecting by depressing. After doing so a flashing bar will be shown on the display, which highlights the time interval selected

Choose the desired Comfort level (or Temperature Set Point, if in Thermoregulation) by turning the knob and selecting it by pushing. If in Thermoregulation using an Ambient Thermostat, select whether or not to turn on the stove (ON o OFF) by turning the knob and selecting the action by pushing.

Program Start/Stop time

Set Time range   Set Comfort Level

Day   Temperature Set Point
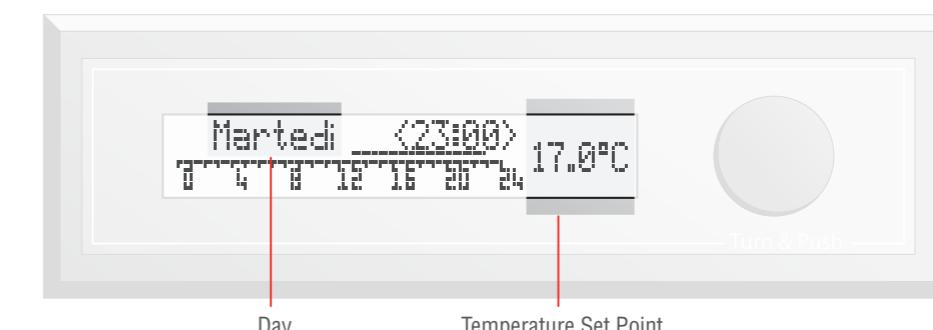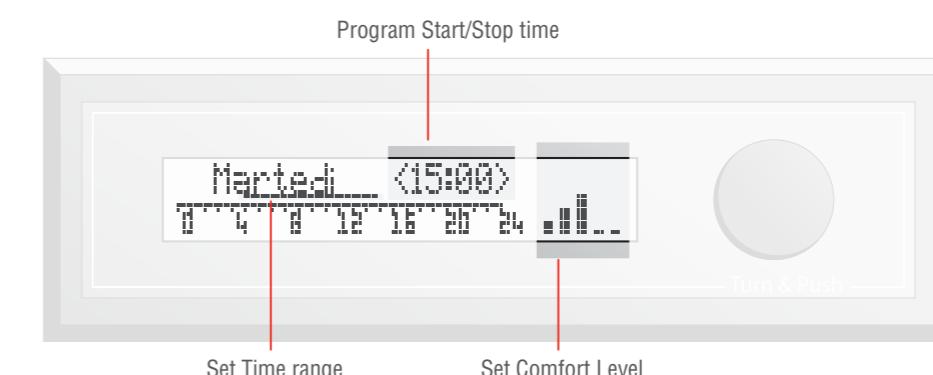
▷ You may repeat the above steps to set multiple program intervals, within the same day

▷ Exit the program for the selected day by turning the knob until the message "BACK" appears, in the place of the Comfort level (or Set Point Temperature) and depress

▷ If required it is possible to repeater the above operations with a different day of the week, or copy the day program just set, to another day. To carry out the latter, you must:

- Turn the display knob until the message "COPY" is shown, and depress

- Place the cursor on the day containing the program to be copied, by rotating the knob and selecting by depressing

- Place the cursor on the day to which the program chosen in the previous step is to be copied, by rotating the knob and selecting by depressing

- You can repeat the above steps to make further copies

- To exit the copy procedure, turn the display knob until the message "BACK" is shown, and then depress

6.3.5.2 Trip Mode Function

When the system is in Chrono mode, you can activate the function *"Trip Mode"* by accessing the parameter "TRIP MODE" and setting the number of days' absence from the home.
If, for example, the function is activated, at 00:00 of the following day, the stove turns off (if on) or remains OFF for a number of days equal to the value set in the parameter "TRIP MODE" (even if, according to the weekly programming, the stove should turn on).

String indicating Trip Mode Function is enabled
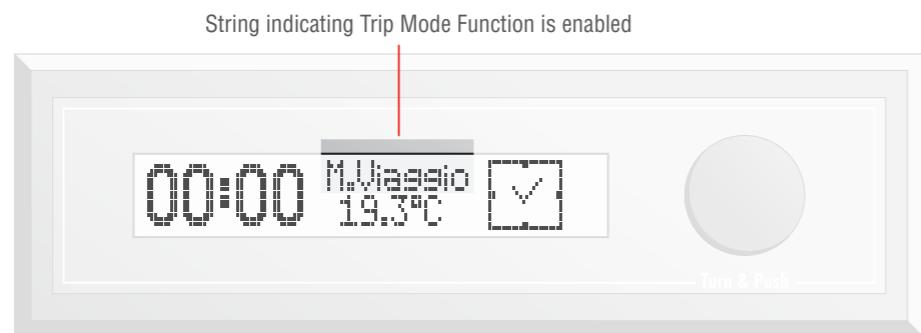
6.3.6 Use of the Delta P Sensor

During the Working state, the system can make use of the Differential pressure sensor Sensirion model SDP-610 to measure the differential pressure of the combustion air detected by the sensor at two points of the air intake of the stove (in which a difference in pressure should be created in the combustible air) and as a result regulate the Smoke Motor speed automatically, so as to maintain differential pressure of the combustion air around the Set Point value set. This allows the combustion process efficiency to be maximised. To connect the sensor correctly to the board use the appropriate cable as shown in par. 3.3 (Part 2). Please refer to the sensor documentation with regards to the method of installing the differential pressure sensor Sensiron SDP-610 on the stove and with regards to the related technical characteristics.
In order to activate the Differential Pressure Sensor (Delta P), you must:

▷ Access submenu AIR SENS. TYPE (accessible to both Service and OEM) and select DELTA P parameter. Once you select such parameter, the DELTA P submenu will be displayed in the next position under the AIR SENS. TYPE submenu.

▷ In the submenu DELTA P Setting the parameter *"Altitude"* with the altitude value of the area in which the stove is placed (range 0-3000m)

▷ Set the range within which the differential pressure of the combustive air may vary, without affecting the Smoke Motor speed (parameter *"Diff. Press. Hyst."*)

▷ Set the level of differential pressure of the combustive air to be maintained during each Comfort level, so as to maximize combustion efficiency for each level (parameter *"Diff. Press.C1-C5"*)

▷ Set the level of the differential pressure of the combustive air, below which an anomaly is detected during Working state (e.g. pipe obstructed) using the parameter *"Warn. Diff. Press."*

6.3.6.1 Abnormal Events detected by the Delta P Sensor

In the Working state, if the differential pressure of the combustive air falls below the value set in parameter *"Warn. Diff. Press."*, the display will show the warning message "OBSTRUCTED BRAZIER". If instead the differential pressure of the combustive air falls below *half* the value set in *"Warn. Diff. Press.* , the system will then enter the Alarm state, and the display will show the message: "AIR FLOW LACKING"

NB: For more detailed information regarding the Sensirion sensor SDP-610 please consult the relevant documentation.

6.3.7 Ambient Fan

The Ambient Fan speed can be managed in two ways:

▶ Fixed speed regardless of Comfort level, if the parameter "AMBIENT FAN" in the User Menu is set to LEVEL 1...5

▶ Speed automatically linked to Comfort level set, where "AMBIENT FAN" in the User Menu is set to AUTO

6.3.8 Pellet Level Sensor

Setting parameter "Present" in the submenu SENS. PELLET to "ON" a Pellet Level Sensor can be managed, if available. The image below illustrates the correct connection of the Pellet Level Sensor to the Control Unit.

When the Pellet Level Sensor is active, and the system is in the Working phase, at the moment in which the sensor detects that the pellet level is low, the display will show (along with an audible beep) the warning message "REMAINING TIME <number of minutes>", where <number of minutes> indicates the remaining number of operational minutes of the stove, and which is automatically decremented until the value 0 is reached. If the parameter *"Auto Turn Off"* is set to "ON" shortly before the pellet tray empties, the stove is turned off automatically.

**NB:** The Pellet level sensor must be of a digital type, with a 5V±10% power supply (max consumption = 20mA), and with a digital output normally in the high state (5V) and which can be put into low state (0V) when the sensor detects a low Pellet level

6.4 TURNING OFF

If the stove is in the working state, and you wish to turn it off, it is necessary to access the User Menu, and select the first menu item "TURN OFF". It is then necessary to push the knob again, and select menu item "YES" and depress the display knob once more. Alternatively, you may enter the Turn Off phase with a long push (5s) of the display knob. This will start the Turn Off phase in the system, which is accompanied by an audible notification (beep) and the scrolling display shows "SYSTEM TURNING OFF - WAIT"

During this phase, the Smoke Motor is activated to ensure progressive smoke temperature reduction, while the Ambient Fan speed progressively reduces according to the smoke temperature reduction, until it falls below the threshold set in the parameter "AmbFanTempThrs" in the COMFORT 1 submenu. When the stove is turned off (smoke temperature below the value set in parameter "Smoke Temperat." in the LIGHTING OFF submenu) and a given time period has passed (which can be set using the "Duration" parameter in the LIGHTING OFF submenu) the system moves to the OFF state (in which the Smoke Motor is also deactivated) and the scrolling display is also cleared.

If the stove is already "cold" (smoke temperature below the value set in parameter "Safety Temp" in the LIGHTING OFF submenu) the system passes immediately to the OFF state. The parameters for this phase are in the submenu "LIGHTING OFF".
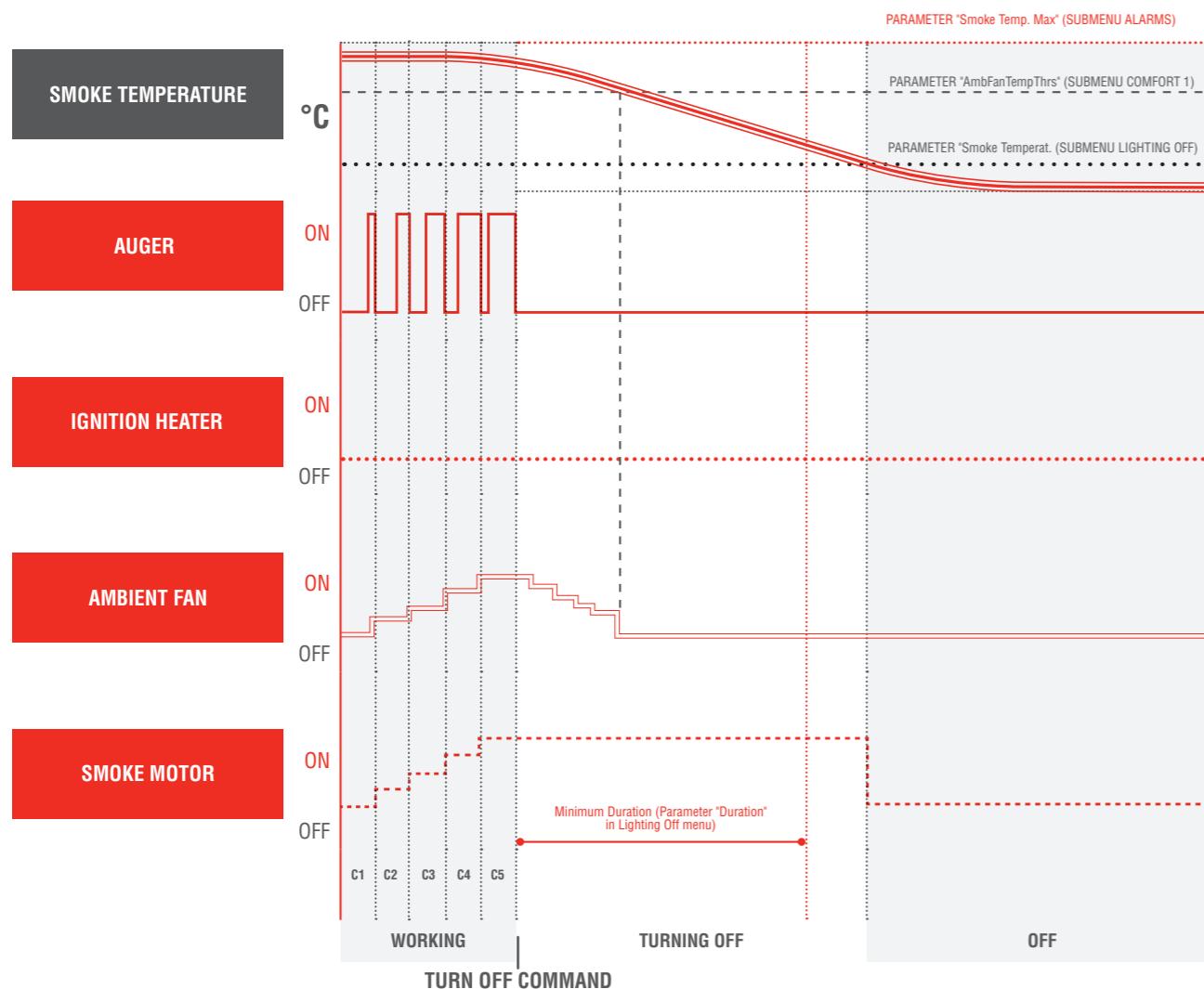

6.5 FUNCTIONS
6.5.1 Antifreeze

To activate this function, an NTC10KΩ probe must be connected to input NTC2 on the Control Unit, the parameter "AMBIENT PROBE" set to "NTC10K" and finally, access the ANTIFREEZE menu item (User Menu) and select "ON".
When the function "Antifreeze" is active, if the stove is off and an ambient temperature value below 1°C in relation to the value set in the parameter "ANTIFREEZE" (in CONFIGURATION submenu) is read, then the stove will turn on automatically at Comfort level 3 and during the Turn On phase, on the display will be shown the message "SYSTEM TURNING ON - ANTIFREEZE".
When the Antifreeze function activates, the following screen is shown on the display:
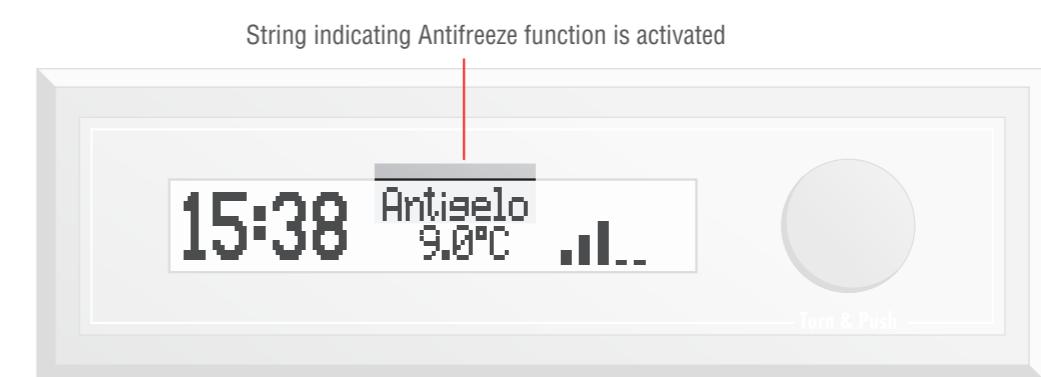
When the ambient temperature is exceeds the value set in parameter "ANTIFREEZE" (in CONFIGURATION submenu) by 5°C, the stove turns of automatically, displaying the message "SYSTEM TURNING OFF - ANTIFREEZE".

6.5.2 Manual Cleaning

To activate this function, you must access the menu CLEANING ON (available only when the stove is turned off) and select "YES".
When the Manual Cleaning function is active the Smoke Motor turns at maximum (the value is set in parameter "Smoke Motor" in submenu LIGHTING OFF) for 10 minutes, and the display shows the message "CLEANING IN PROGRESS". The function can be stopped manually by pressing the knob to enter CLEANING OFF in the menu and selecting "YES'".
When this function is activated, and the smoke temperature is greater than the value set in parameter "Safety Temp" (in LIGHTING OFF submenu), the display will show the warning message "HIGH SMOKE TEMPERATURE".

6.5.3 Dehumidification

The function *"Dehumidification"* is available when the Ignition Heater is managed with Triac (Ignition Heater connected to OUT3 on the Control Unit).

To activate this function, you must access the submenu DEHUMIDIFICAT, select the parameter *"Enable"* and select "ON". If the function *"Dehumidification"* is active when the stove is turned on, and at least six months have passed since the last turn on, the system will not immediately activate the phases for turning on, but will enter a state (known as *"Dehumidification State"*) in which power is progressively supplied to the Ignition Heater so moisture (if any) can escape that could have entered the Ignition Heater itself during the period when the stove was turned off.

The phase *"Dehumidification"* lasts around two hours, and whilst active the message *"Dehumidification in progress…"* is shown on the display, and the remaining time until it will finish.

During Dehumidification phase execution, you may pass directly to the Turn On phase through a long press of the display knob, where the parameter *"Interruptible"* (in submenu DEHUMIDIFICAT.) is set to "ON".

## 6.6 IR REMOTE CONTROLLER

In the figure below the functions of the Infrared Remote Control buttons are illustrated.

Button to set Ambient Temperature Set Point (if Temperature Regulation is setted)

Button to enable/disable Chrono Mode

Button to set Comfort Level

Lock Button

Turn On / Off Button

7.1 TYPE A USB 2.0 PORT

A type A USB 2.0 port is present on the Control Unit, as illustrated in the image below:
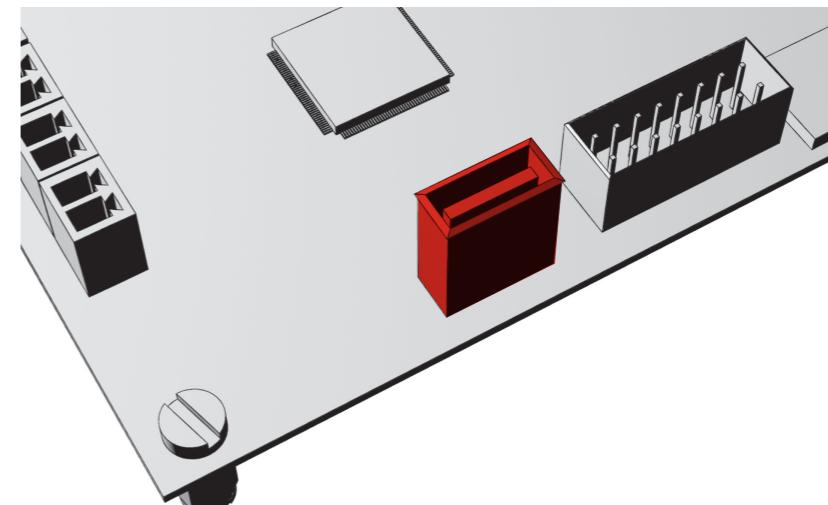
The type A USB port functions are as follows:

▷ Downloads the parameters and events list for the System from the Control Unit to a portable mass storage memory (USB key)

▷ Uploads the parameters for the system to the Control Unit using a portable mass storage memory (USB key)

▷ Control Unit Software Update

▷ Communication with Supervisor Software through USB 2.0 M-M cable (available with the kit)

7.1.1 Parameters and Event Log Download

The following describes the process to follow to carry out download of parameters and events list from the system to a USB key:

▷ With the power supply to the system disconnected, insert the USB key to the relevant connection on the Control Unit, identifiable by the label "USB A". A USB key which supports USB 2.0 protocol and with over 10Mb of space available must be used (it is advisable to use an empty key)

▷ Powering the Control Unit

▷ Wait for the emission of three "beeps" from the Control Unit

▷ Remove the power from the Control Unit and remove the USB key

After carrying out the above sequence, you will find three files stored on the USB key:

▷ spfxxxx.bu: Binary file containing system parameters

▷ spfxxxx.bu: Binary file containing system factory settings (which become operational whenever reset to factory settings is carried out)

▷ lgxxxx.bu : Binary file containing system events (alarms, warnings, service requests)

For each file type above the suffix "xxxx" is an incremental number: will be 0000 if the key does not contain any other file of the same type, and will be 0001 if it already contains a file of the same type with the suffix 0000, and so on.
To view the contents of the saved files, you must install the Supervisor Software (the description of which is not included in this Manual).

7.1.2 Parameters Upload to Control Unit

The parameters to be loaded to the system are saved in the binary files which are named as follows:

▷ basepar_w.bin: Binary file containing system parameters to be loaded

▷ basepar_f.bin: Binary file containing system factory settings to be loaded to the section of memory reserved for factory parameters. These parameters will become effective, if the restore factory setting procedure is carried out

To create the two binary files above, there are two possible ways:

▷ Create the parameter files using the Supervisor Software (the description of which is not included in this Manual).

▷ Rename the binary files downloaded from the Control Unit: basepar_w.bin can be created by renaming the spxxxx.bu file, whilst basepar_f.bin can be created by renaming the spfxxxx.bu file

Once you have two files at your disposal, the two parameter files to be loaded to the system must adhere to the following procedure in order to carry out the load:

▷ Save the basepar_w.bin and basepar_f.bin files (or one of the two) at the Root of a USB key which uses USB 2.0 protocol. You are advised to use a blank key.

▷ With the power supply to the system disconnected, insert the USB key to the relevant connection on the Control Unit, identifiable by the label "USB A"

▷ Power on the system and wait for the emission of three "beeps" from the Control Unit. If the operation has been carried out successfully, the display will show the message "UPGRADE OK X" where X is the number of the loaded file.

▷ Remove the power supply from the Control Unit and remove the USB key.

When next turned on, the system will have its parameters updated with those which have been uploaded, whilst the former values will be saved to the USB key, with the events list.

7.1.3 Control Unit Software Update

The system allows you to update the Control Unit Software using a USB key.
The binary file containing the Software used in the update process must be named basectx.bin.

NB: The update is only possible with Release Software which is later than that which is to be updated (otherwise the system will not carry out any operation)

The procedure to follow to upload the update to the system memory is described below:

▷ Save the Software update file to the Root of a USB key which uses USB 2.0 protocol. You are advised to use a blank key.

▷ With the power supply to the system disconnected, insert the USB key to the relevant connection on the Control Unit, identifiable by the label "USB A"

▷ Power on the system and wait for the emission of three "beeps" from the Control Unit. If the operation has been carried out successfully, the display will show the message "UPGRADE OK 1"

▷ Remove the power supply from the Control Unit and remove the USB key

Once the procedure above has been carried out, when the system is next powered, it will restart with the new Software.
You may also update the Software of the Control Unit satellites LCD Display Module. For a detailed description of this procedure, please contact RICA technical support.

7.2 SAFETY FUSE

The Control Unit has a fuse mounted in the power supply section, to protect the board against high currents resulting from e.g. a short-circuit between the phase and the neutral power supply.

The table below shows the technical characteristics of the fuse to be used:

SUPPLY VOLTAGE	250 Vac/300 dc
NOMINAL CURRENT	3.15 A
INTERRUPT CURRENT	1500 A
DIMENSIONS	5 x 20 mm
MOUNTING STYLE	Fit
TERMINATION STYLE	Cartridge

To change the fuse, unscrew the cap of the fuse holder using a flat head screwdriver as shown in the image below:
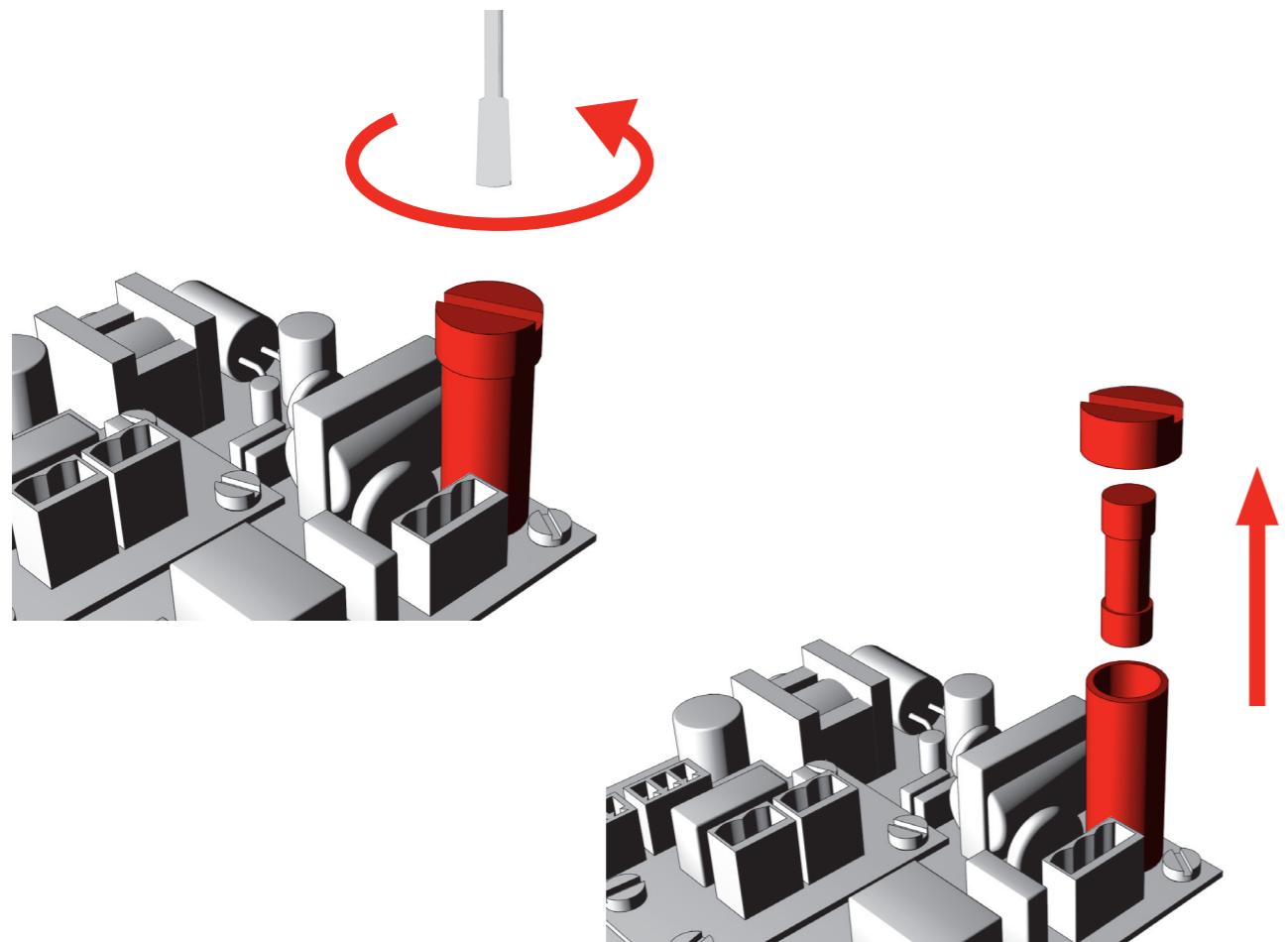
Then replace the fuse and retighten the cap.

7.3 EMI FILTER

The Control Unit is equipped with an EMI filter, which for typical installation filter.
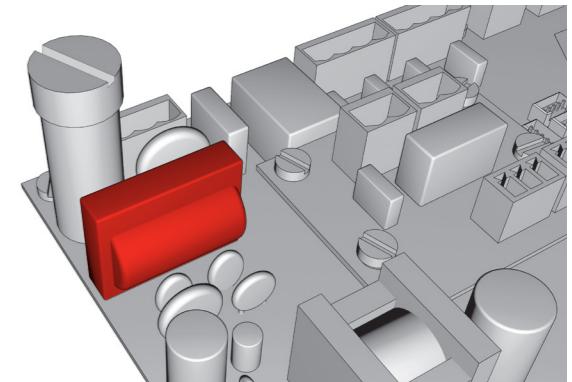
7.4 HIGH VOLTAGE OUTPUT FEEDBACK

Each power output is equipped with a feedback circuit with a diagnostic function for the output: detection of any disconnected load and Triac short circuit.
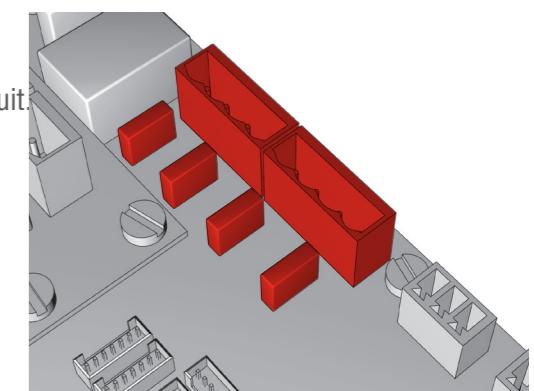
7.5 RECHARGEABLE BACKUP BATTERY

In some versions the board has a backup battery mounted to it that allows some data (such as time and date set) to be saved, even where there is no power supply. This battery is also rechargeable when the system is powered, thereby not requiring replacement.

NB: Before replacing the fuse, ensure that there is no power to the board and no voltage is present.
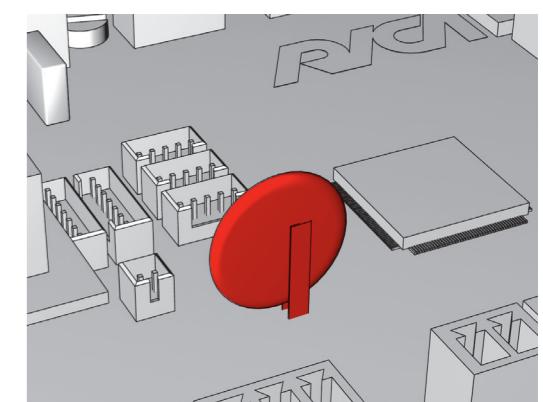
NB: If the Control Unit is not powered for a period of over 950 consecutive days, the battery will no longer be able to be recharged.

7.6 DOUBLE INSULATION

The control unit is equipped with double insulation, to insulate the power part of the Control Unit from the low voltage part, in compliance with the applicable safety requirements.

HIGH VOLTAGE AREA (230Vac)

SELV AREA (MAX 12Vdc)
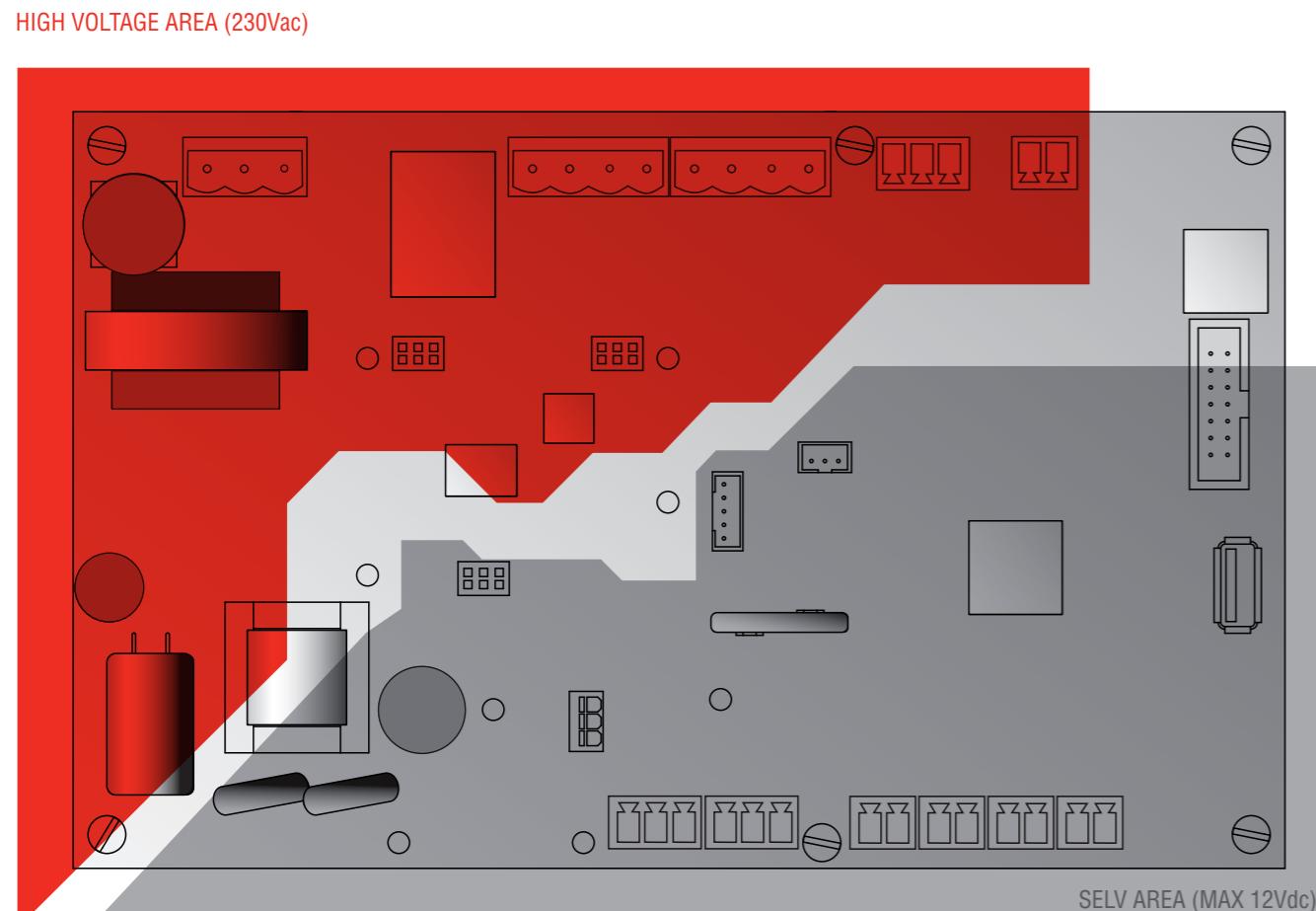
The Pellet Control Kit can also be configured to manage hydro pellet stoves, with the aid of the on-board module *"On Board Expansion"*.
More complex stove types with Hydro configuration can be managed using the module *"On Bus Expansion"* (not discussed in this paragraph).
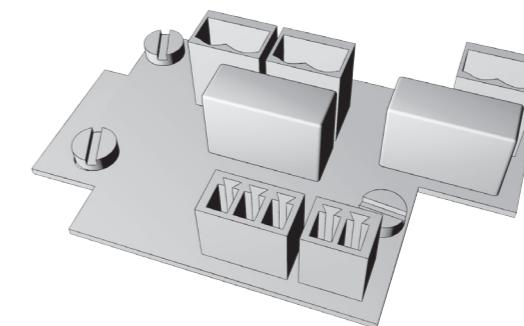
The On Board Expansion module allows the system to manage two additional inputs (one input for the NTC10KΩ Temperature Probe and a clean contact) and two power outputs (one Triac output, identical to that used in the Control Unit, and a relay output).
To configure the system in Hydro mode, you must change the "STOVE TYPE" parameter (in CONFIGURATION submenu) from *"Air"* to *"Hydro"*.

8.1 ON BOARD EXPANSION FEATURES

DIMENSIONS		50 x 73 x 34mm
INPUT	Insulated	1 Input for NTC 10KΩ probe 1 Input for Free Contact
OUTPUT		2 Relay Output (max current available: 3A) 1 Triac Output (Max Current available: 1.2A)

8.2 FASTENING AND WIRING
8.2.1 Fastening

The On Board Expansion module is fastened to the Control Unit using three strip connectors, underneath the module, using the four M3 nylon spacers (preassembled on the Control Unit) and the four 3x6mm nylon tapping screws, as shown in the figure below:
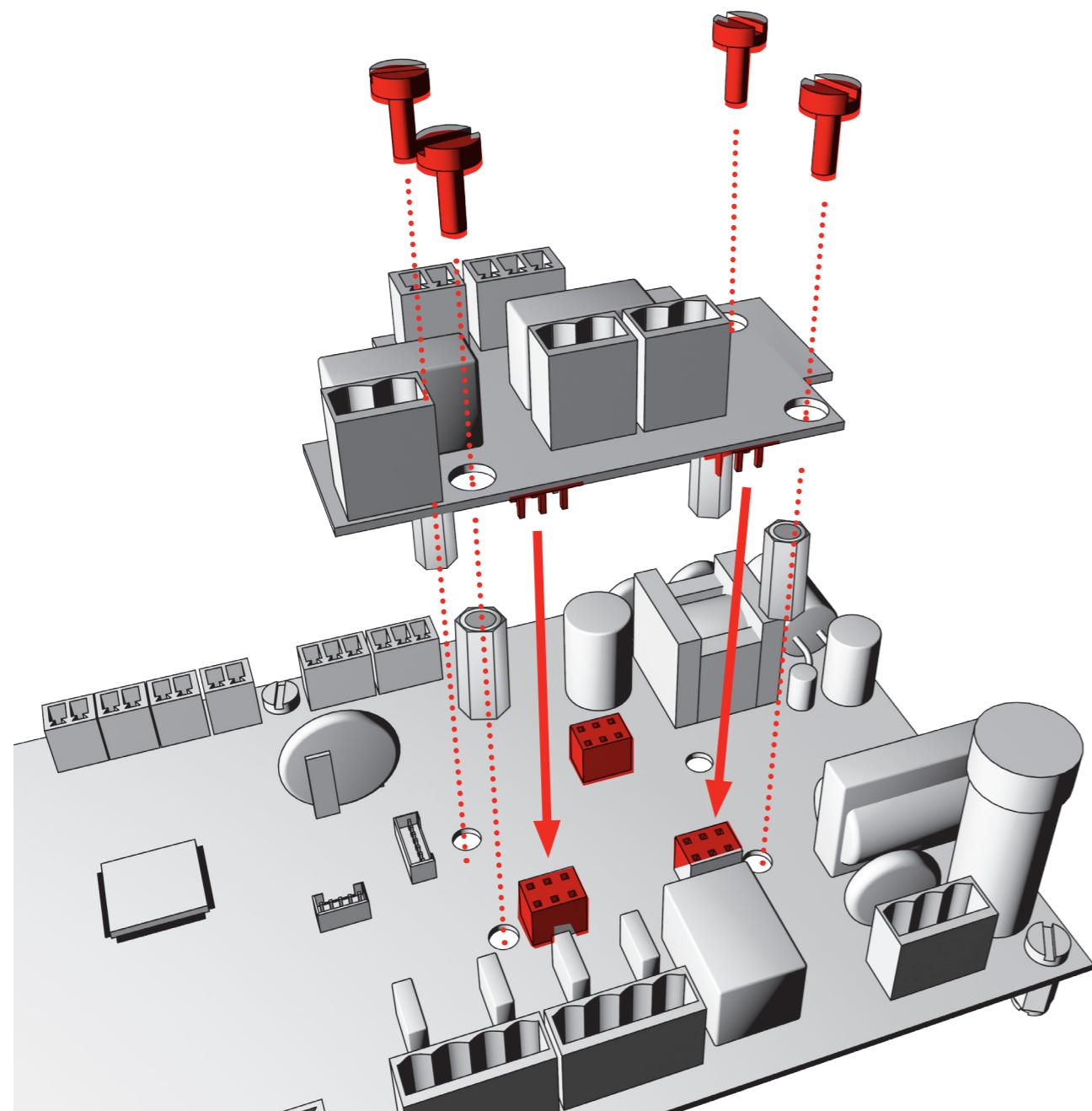
8.2.2 Wiring

For wiring, please refer to paragraph 3.3, integrating the wiring harness illustrated in the image below. It is necessary to make sure that for configurations of Hydro stoves described below, only a subset of the sensors/actuators shown in the image below are used from time to time.

Phase

Water Pump (230Vac)

3-way motor Electrovalve (230Vac)

Neutral

ON   OFF

ON BOARD EXPANSION MODULE

H2O
α
NTC10KΩ Stove Water Probe

F
Water Flow Sensor

0 V   Out   5 V
A
H2O
+V   Out   - V
Analog Water Pressure transducer

H2O
α
NTC10KΩ Boiler probe

H2O
α
NTC10KΩ Boiler probe

AMB
α
NTC10K(Ω) Ambient Temperature Probe

NB: The Water Flow Sensor must normally be open before sentence: The analog water pressure transducer must have a voltage supply =5Vdc±10% (max consumption = 20mA)

8.3 SPECIFIC TECHNICAL PARAMETERS FOR HYDRO CONFIGURATION

When in Hydro configuration, the CONFIGURATION submenu contains a new submenu called HYDRO MENU, in which the following parameters can be set:

LOGIN	MAIN MENU	LEVEL 1	LEVEL 2	STRING	DESCRIPTION	RANGE	RES.	UNIT
OEM	CONFIGURATION	HYDRO MENU	Thermoregulation	AMBIENT	Standard Thermoregulation: Stove power is automatically regulated to keep the ambient temperature around the ambient temperature Set Point (if the parameter "AMBIENT PROBE" in the CONFIGURATION submenu is set to "NTC10K") or in a temperature interval set in an external thermostat (if the parameter "AMBIENT PROBE" is set to "THERMOSTAT"). The thermoregulation parameters are the same as those used for the Air stove type (see paragraph 6.3.2.1), taking into account that, where Regulation is carried out using a Thermostat, the parameters "Inf Differential" and "Sup Differential" are not used	-	-	-
				WATER	Hydro Thermoregulation: is similar to that of Ambient, with the difference that the temperature monitored is not that of the ambient air, but that of the radiator water. The Set Point is set using a parameter, while the other regulation-related parameters (lower and upper temperature hysteresis and related Comfort state) are the same as those used for thermoregulation in the Air stove type (see paragraph 6.3.2.1)	-	-	-
			Alarm Temp. Water		Radiator water temperature threshold above which the stove enters alarm state ("TOO HIGH WATER TEMPERATURE")	50-90°C	1	°C
			Warn. Water Temp.		Radiator water temperature threshold above which the stove generates a Warning message ("HIGH WATER TEMPERATURE")	50-90°C	1	°C
			Pump Temp. Sup		Radiator water temperature threshold above which the circulation pump is activated or turned off according to the value set in the parameter "Hydro Configurat."	45-65°C	1	°C
			Pump Temp. Inf		Radiator water temperature threshold below which the circulation pump is activated or turned off according to the value set in parameter "Hydro Configurat."	45-65°C	1	°C
			Hydro Configurat.		Hydraulic Configurations setting (see para. 8.7)	1-8	1	-

LOGIN	MAIN MENU	LEVEL 1	LEVEL 2	STRING	DESCRIPTION	RANGE	RES.	UNIT
OEM	CONFIGURATION	HYDRO MENU		TempAccumulInf	Lower temperature threshold of Boiler or Puffer water	45-65°C	1	°C
				TempAccumulSup	Upper temperature threshold of Boiler or Puffer water	45-65°C	1	°C
				Min Water Temp.	Radiator water temperature threshold below which the circulation pump is activated for safety reasons	5-15°C	1	°C
				Water Pres. Sens.	Indicates presence or absence of analogue water pressure switch. Once the ON value is selected (water pressure switch present) the user will have to set the voltage supply level of the pressure switch corresponding to the minimum level of water pressure (below which "WATER PRESSURE INSUFFICIENT" alarm is activated) and the voltage supply level of the pressure switch corresponding to the maximum level of water pressure (above which "EXCESSIVE WATER PRESSURE" alarm is activated)	ON/OFF	-	-
				Ambient Fan	Ambient Fan activated or not activated. If activated the Ambient Fan is managed as in the Air configuration	ON/OFF	-	-

LEGEND:

OEM	Menu accessible only by OEM with specific password

8.4 ALARMS AND WARNINGS WITH HYDRO CONFIGURATION

8.4.1 Alarms

TOO HIGH WATER TEMPERATURE

SHOWN ON DISPLAY (SCROLLING)	"TOO HIGH WATER TEMPERATURE"
ABNORMAL DESCRIPTION	Radiator Water Temperature has exceeded the alarm threshold set
ACTIONS TAKEN	Stove Controlled Turn Off + Actuator Management according to Configuration (see para. 8.7)
USER RESET	Display knob depressed for 5s
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"WATER T HIGH"

WATER PROBE KO

SHOWN ON DISPLAY (SCROLLING)	"WATER PROBE KO"
ABNORMAL DESCRIPTION	Water Temperature Probe faulty or disconnected
ACTIONS TAKEN	Stove Controlled Turn Off + Actuator Management according to Configuration (see para. 8.7)
USER RESET	Display knob depressed for 5s
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"WATER PROBE KO"

TOO HIGH WATER PRESSURE

SHOWN ON DISPLAY (SCROLLING)	"TOO HIGH WATER PRESSURE"
ABNORMAL DESCRIPTION	Hydraulic system obstruction (alarm can be activated only if parameter "Water Pres. Sens." is set to "ON")
ACTIONS TAKEN	Stove Controlled Turn Off + hydraulic circuit Actuators OFF
USER RESET	Display knob depressed for 5s
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"PRESS. PRESS. HIGH"

LOW WATER PRESSURE

SHOWN ON DISPLAY (SCROLLING)	"LOW WATER PRESSURE"
ABNORMAL DESCRIPTION	Low Radiator Water Pressure (alarm can be activated only if parameter "Water Pres. Sens." is set to "ON"
ACTIONS TAKEN	Stove Controlled Turn Off + hydraulic circuit Actuators OFF
USER RESET	Display knob depressed for 5s
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"H2O PRESS LOW"

For all:

INTERMITTENT BEEP ALARM	YES

8.4.2. Warnings

HIGH WATER TEMPERATURE

SHOWN ON DISPLAY (SCROLLING)	"HIGH WATER TEMPERATURE"
ABNORMAL DESCRIPTION	Radiators Water Temperature has exceeded the Warning Threshold set
ACTIONS TAKEN	Warning Message activated + Minimum power until the water Temperature falls below the Warning threshold set + hydraulic circuit Actuator Management according to Configuration (see para. 8.7)
USER RESET	Display knob short depress
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	---

WATER PUMP FAULT

SHOWN ON DISPLAY (SCROLLING)	"WATER PUMP FAULT"
ABNORMAL DESCRIPTION	Pump output damaged or no Pump connected
ACTIONS TAKEN	Warning message activated + pump deactivated
USER RESET	Display knob short depress
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"WATER PUMP FAULT"

LOW WATER TEMPERATURE

SHOWN ON DISPLAY (SCROLLING)	"LOW WATER TEMPERATURE"
ABNORMAL DESCRIPTION	Radiators Water Temperature is below the value set in parameter "Min. Water Temp."
ACTIONS TAKEN	Warning Message activated + hydraulic circuit Actuator Management according to Configuration (see para. 8.7)
USER RESET	Display knob short depress
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	---

BOILER PROBE KO

SHOWN ON DISPLAY (SCROLLING)	"BOILER PROBE KO"
ABNORMAL DESCRIPTION	Boiler Water Temperature Probe (connected to NTC3 input on the Control Unit) faulty or not connected
ACTIONS TAKEN	Warning message activated + 3-way ON/OFF Electrovalve, managed so as to keep water constantly flowing through the hydraulic radiator circuit + Pump activate only to ensure water flows through the heating system
USER RESET	Display knob short depress
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"BOIL PROBE KO"

PUFFER PROBE KO

SHOWN ON DISPLAY (SCROLLING)	"PUFFER PROBE KO"
ABNORMAL DESCRIPTION	Puffer Water Temperature Probe (connected to NTC1 input on the Control Unit) faulty or not connected.
ACTIONS TAKEN	Warning Message activated + Pump not activated to ensure water flow to Puffer
USER RESET	Display knob short depress
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"PUFF PROBE KO"

8.5 OPERATIONAL MODES WITH HYDRO CONFIGURATION

In hydro configuration, the system can operate in three distinct modes:

- Comfort

- Ambient Regulation

- Water Regulation

8.5.1 Comfort

To set mode, in parameter REGULATION (in User Menu), select the COMFORT menu item.
As with the Air Type Stove, the stove operates with a fixed Comfort level. According to the value set in the parameter "AMBIENT FAN" the speed of the Ambient Fan can be manually or automatically regulated (in the latter case, the speed is linked to the Comfort level).
During Working phase, the ambient temperature is displayed where an NTC10KΩ sensor is present on input NTC2 of the Control Unit and where the parameter AMBIENT PROBE is set to NTC10K. If this parameter is set to THERMOSTAT and a thermostat is connected to input NTC2 on the Control Unit, a string is displayed showing the thermostat current state. If this parameter is set to NONE no message relating to ambient temperature or thermostat state is shown.
For a description of how to change the Comfort level, please see paragraph 6.3.1.

8.5.2 Ambient Regulation

To select this mode, in parameter REGULATION (in the User Menu) you must select the item TEMPERATURE and in parameter "Thermoregulation" (in the "HYDRO MENU", OEM level access) the item "AMBIENT".
In this mode the parameter AMBIENT PROBE can be set to NTC10K or to THERMOSTAT.
If the parameter "AMBIENT PROBE" is set to "NTC10K" the stove operates by modulating the Comfort level so as to maintain the temperature level read by the NTC10KΩ sensor (which must be connected to input NTC2 on the Control Unit) within a certain range. In working phase the set Set Point temperature is shown on the display. Regulation management (and the related parameters) and Temperature Set Point level update are described in detail in paragraph 6.3.2.1.
If the parameter "AMBIENT PROBE" is set to "THERMOSTAT" the stove operates by modulating the Comfort level as in the previous example, according to the state of the external thermostat (which must be connected to input NTC2

on the Control Unit).

Parameters related to Comfort level which are used for regulation are those used for Ambient Regulation (see paragraph 6.3.2.1).

In this mode, in the Working phase, the display will show a string indicating the current thermostat state.

8.5.3 Water Regulation

To select this mode, in parameter "REGULATION" (in the User Menu) you must select the item "TEMPERATURE" and in parameter "Thermoregulation" (in the "HYDRO MENU", OEM level access) the item "WATER".

This mode is identical to that for Ambient Regulation with NTC10KΩ Temperature Probe, with the sole difference that the temperature monitored is not that of the ambient air but that of the radiator water read by the NTC10KΩ (by contact or immersion) which must be connected to the NTC input of the On Board Expansion. The water Temperature Set Point is set in parameter "WATER SET" (in the User Menu).

Management of the Ambient Fan and that of display of the ambient temperature/thermostat state during Working phase are the same as those for Comfort regulation.
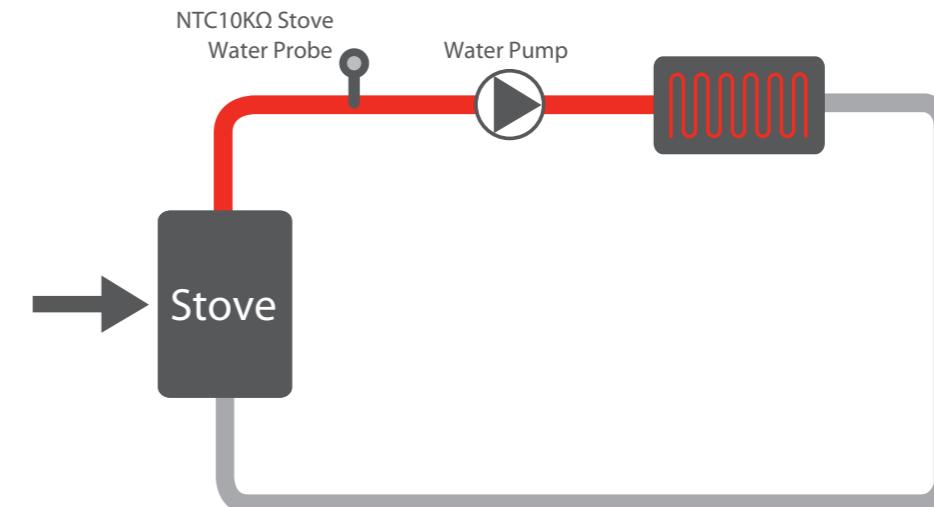
## 8.6 ADDED FUNCTIONS WITH HYDRO CONFIGURATION
8.6.1 Water Pump Anti - Lock Function

When the stove is turned off the system automatically activates the circulation pump for a few seconds every ten days, to avoid blockages in the pump.

8.7 MANAGED HYDRAULIC CONFIGURATIONS
8.7.1 Configuration 1

The following illustrates the hydraulic diagram for configuration 1:

In the figure below a correct wiring model is shown for the Pellet Control Kit (to be integrated to the wiring shown in para. 3.3) in Hydro configuration for management of the hydraulic circuit for configuration 1:
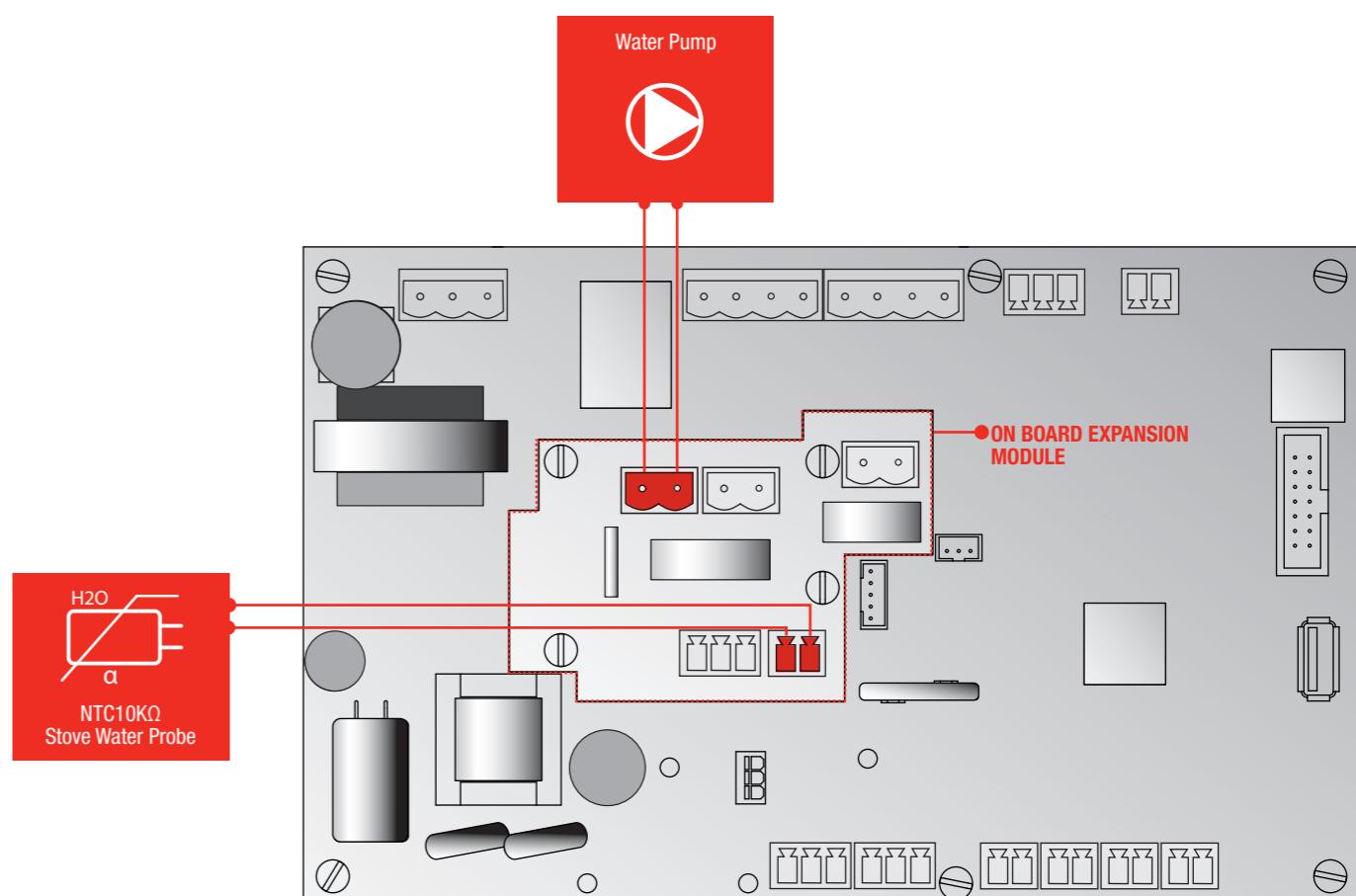
To operate in configuration 1 you must set parameter *"Hydro Configurat."* in the HYDRO MENU submenu to 1.

The Table below summarises the hydraulic system functionality (under normal operating conditions) in configuration 1:

STOVE WATER TEMPERATURE (T)	PUMP
Stove Water T > Pump Temp. Sup	ON
Stove Water T < Pump Temp. Inf	OFF

The Table below summarises system functionality in anomalous cases:

ABNORMAL CONDITION	EVENT TYPE	SCROLLING STRING	PUMP
Stove Water Temp. > Alarm Water Temp.	ALARM	"TOO HIGH WATER TEMPERATURE"	ON
Stove Water Temp. > Warn Water Temp.	WARNINGS	"HIGH WATER TEMPERATURE"	ON
Stove Water Temp. < Min Water Temp.	WARNINGS	"LOW WATER TEMPERATURE"	ON
Stove Water Temperature Probe is disconnected or damaged	ALARM	WATER PROBE KO	ON

8.7.2 Configuration 2

The following illustrates the hydraulic diagram for configuration 2:
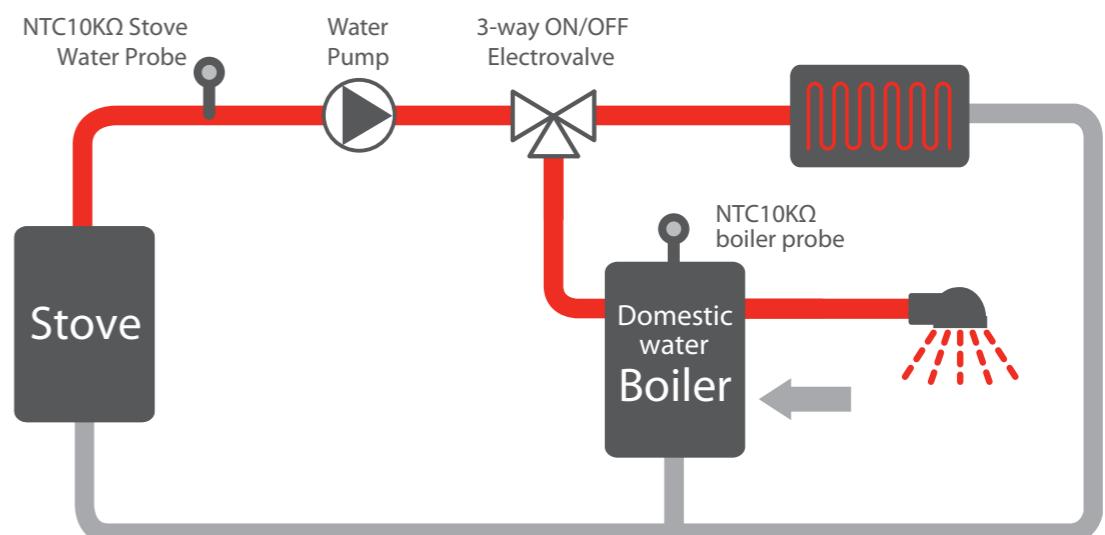
In the figure below a correct wiring model is shown for the Pellet Control Kit (to be integrated to the wiring shown in para. 3.3) in Hydro configuration for management of the hydraulic circuit for configuration 2:
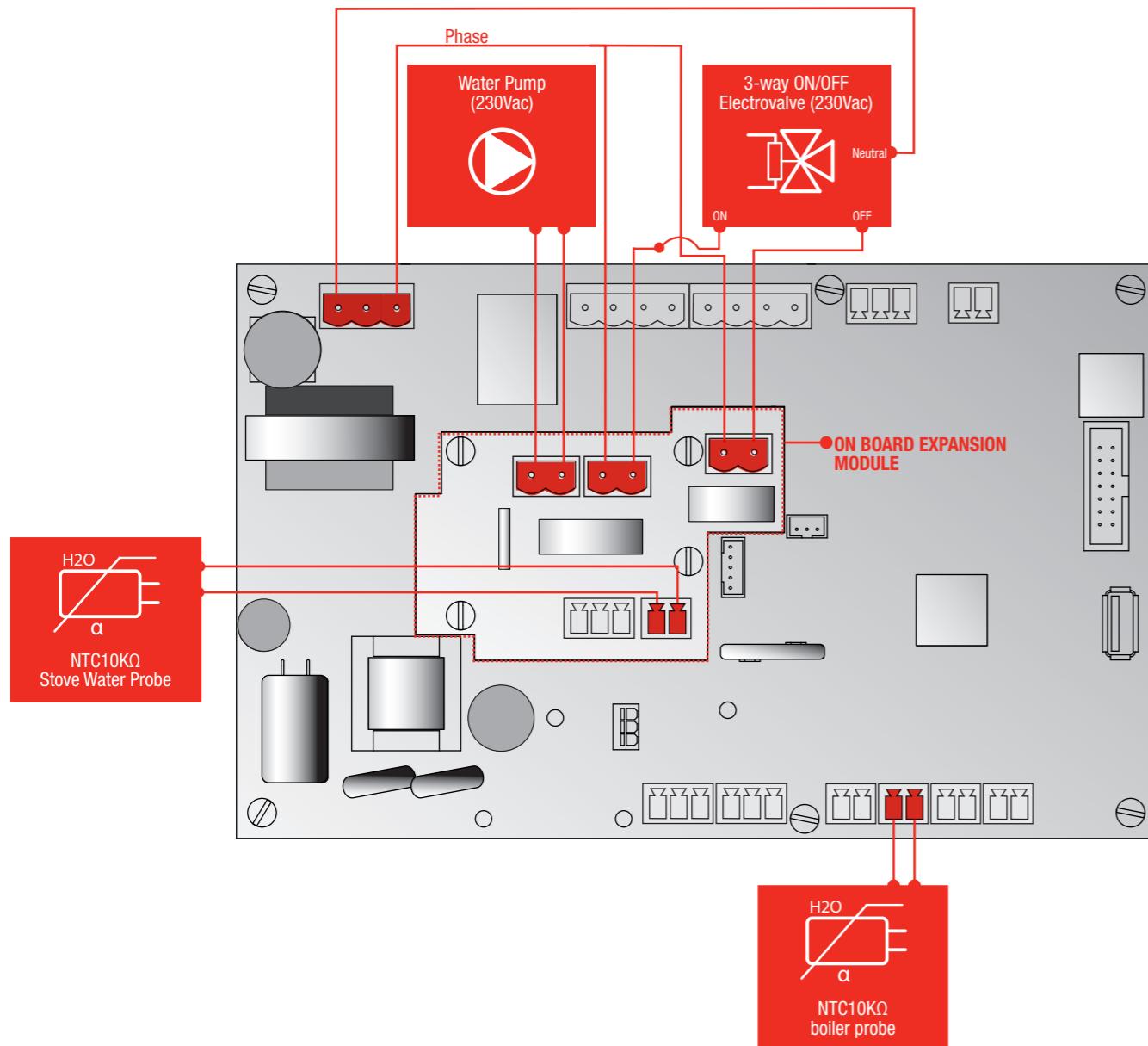
To operate in configuration 2 you must set parameter *"Hydro Configurat."* in the HYDRO MENU submenu to 2.
The Table below summarises the hydraulic system functionality (under normal operating conditions) in configuration 2:

STOVE WATER TEMPERATURE (T)		BOILER WATER TEMPE-RATURE (T)	PUMP	ELECTROVALVE
Stove Water T > Pump Temp. Sup	Stove Water T > TempAccumulSup	Boiler Water T > TempAccumulSup	ON	OFF
		Boiler Water T < TempAccumulInf	ON	ON
	Stove Water T < TempAccumulInf	Boiler Water T > TempAccumulSup	ON	OFF
		Boiler Water T < TempAccumulInf	ON	OFF
Stove Water T < Pump Temp. Inf	Stove Water T > TempAccumulSup	Boiler Water T > TempAccumulSup	OFF	OFF
		Boiler Water T < TempAccumulInf	ON	ON
	Stove Water T < TempAccumulInf	Boiler Water T > TempAccumulSup	OFF	OFF
		Boiler Water T < TempAccumulInf	OFF	OFF

The Table below summarises system functionality in anomalous cases:

ABNORMAL CONDITION	EVENT TYPE	SCROLLING STRING	PUMP	ELECTROVALVE
Stove Water Temp. > Alarm Water Temp.	ALARM	"TOO HIGH WATER TEMPERATURE"	ON	OFF
Stove Water Temp. > Warn Water Temp.	WARNINGS	"HIGH WATER TEMPERATURE"	ON	OFF
Stove Warer Temp. < Min Water Temp.	WARNINGS	"LOW WATER TEMPERATURE"	ON	OFF
Stove Water Temperature Probe is disconnected or damaged	ALARM	WATER PROBE KO	ON	OFF

8.7.3 Configuration 3

The following illustrates the hydraulic diagram for configuration 3:
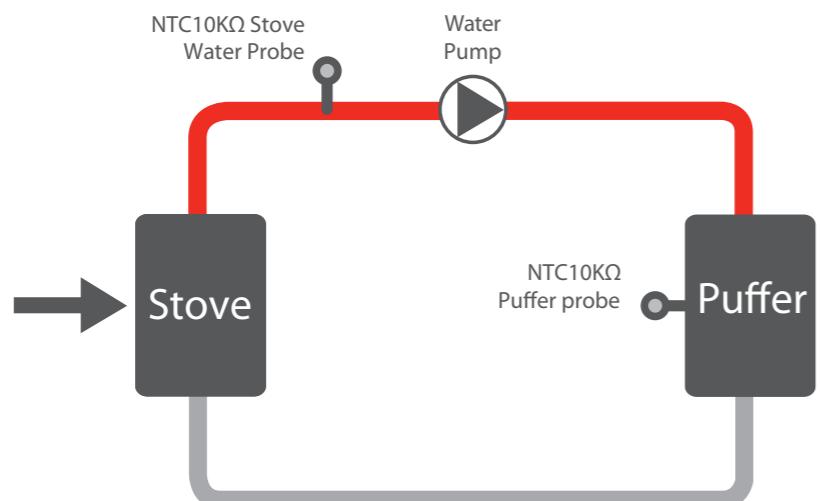
In the figure below a correct wiring model is shown for the Pellet Control Kit (to be integrated to the wiring shown in para. 3.3) in Hydro configuration for management of the hydraulic circuit for configuration 3:
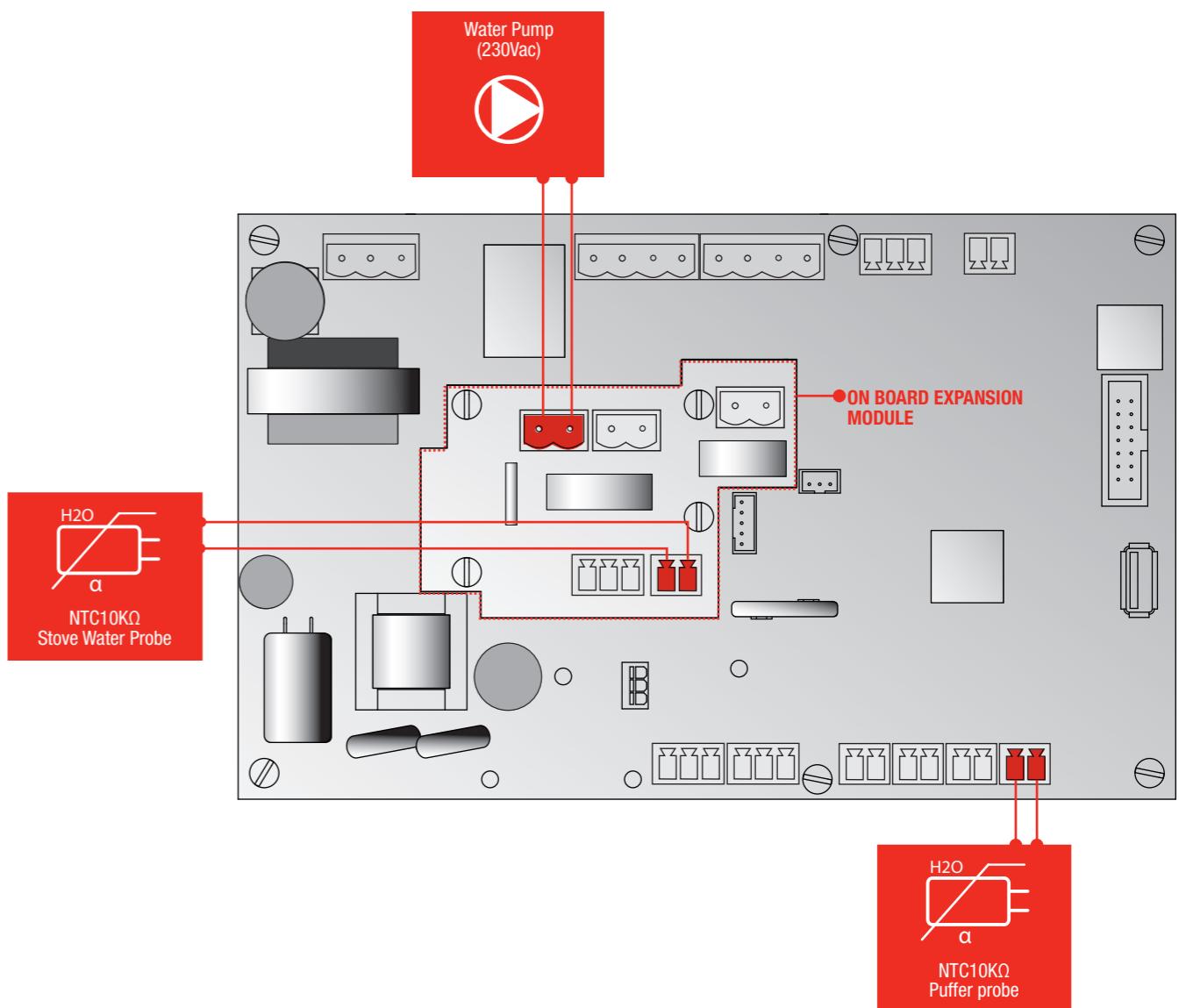
To operate in configuration 3 you must set parameter *"Hydro Configurat."* in the HYDRO MENU submenu to 3.

The Table below summarises the hydraulic system functionality (under normal operating conditions) in configuration 3:

| STOVE WATER TEMPERATURE (T)		PUMP
Stove Water T > Pump Temp. Sup	Puffer Water T> TempAccumulSup	OFF
	Puffer Water T < TempAccumulInf	ON
Stove Water Temp. < Pump Temp. Inf	Puffer Water T> TempAccumulSup	OFF
	Puffer Water T < TempAccumulInf	OFF

The Table below summarises system functionality in anomalous cases:

ABNORMAL CONDITION	EVENT TYPE	SCROLLING STRING	PUMP
Stove Water Temp. > Temp. Alarm Water	ALARM	"TOO HIGH WATER TEMPERATURE"	ON
Stove Water Temp. > Temp. Warn. Water	WARNINGS	"HIGH WATER TEMPERATURE"	ON
Stove Water Temp. < Min Water Temp.	WARNINGS	"LOW WATER TEMPERATURE"	ON
Stove Water Temperature Probe is disconnected or damaged	ALARM	WATER PROBE KO	ON

8.7.4 Configuration 4

The following illustrates the hydraulic diagram for configuration 4:
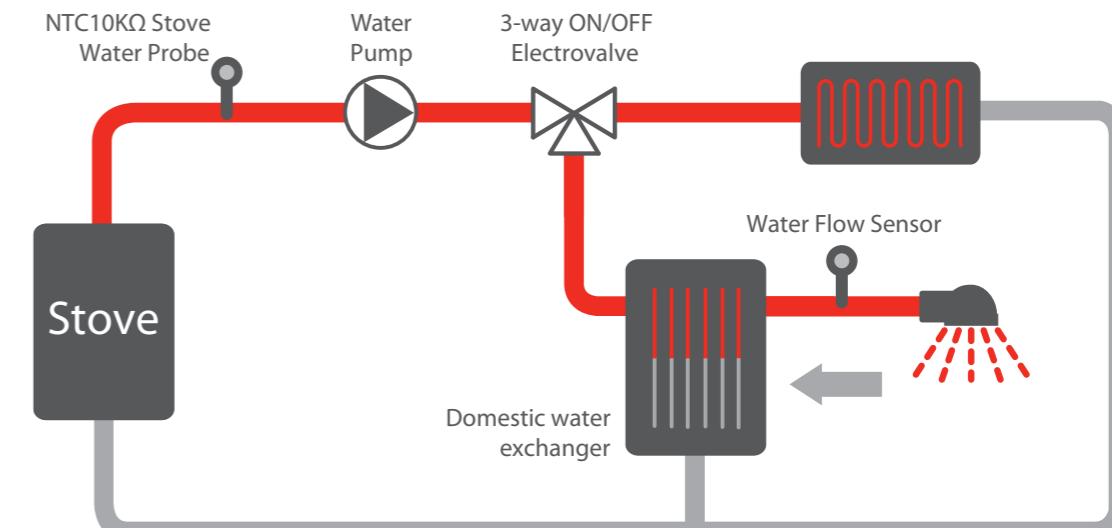
In the figure below a correct wiring model is shown for the Pellet Control Kit (to be integrated to the wiring shown in para. 3.3) in Hydro configuration for management of the hydraulic circuit for configuration 4:
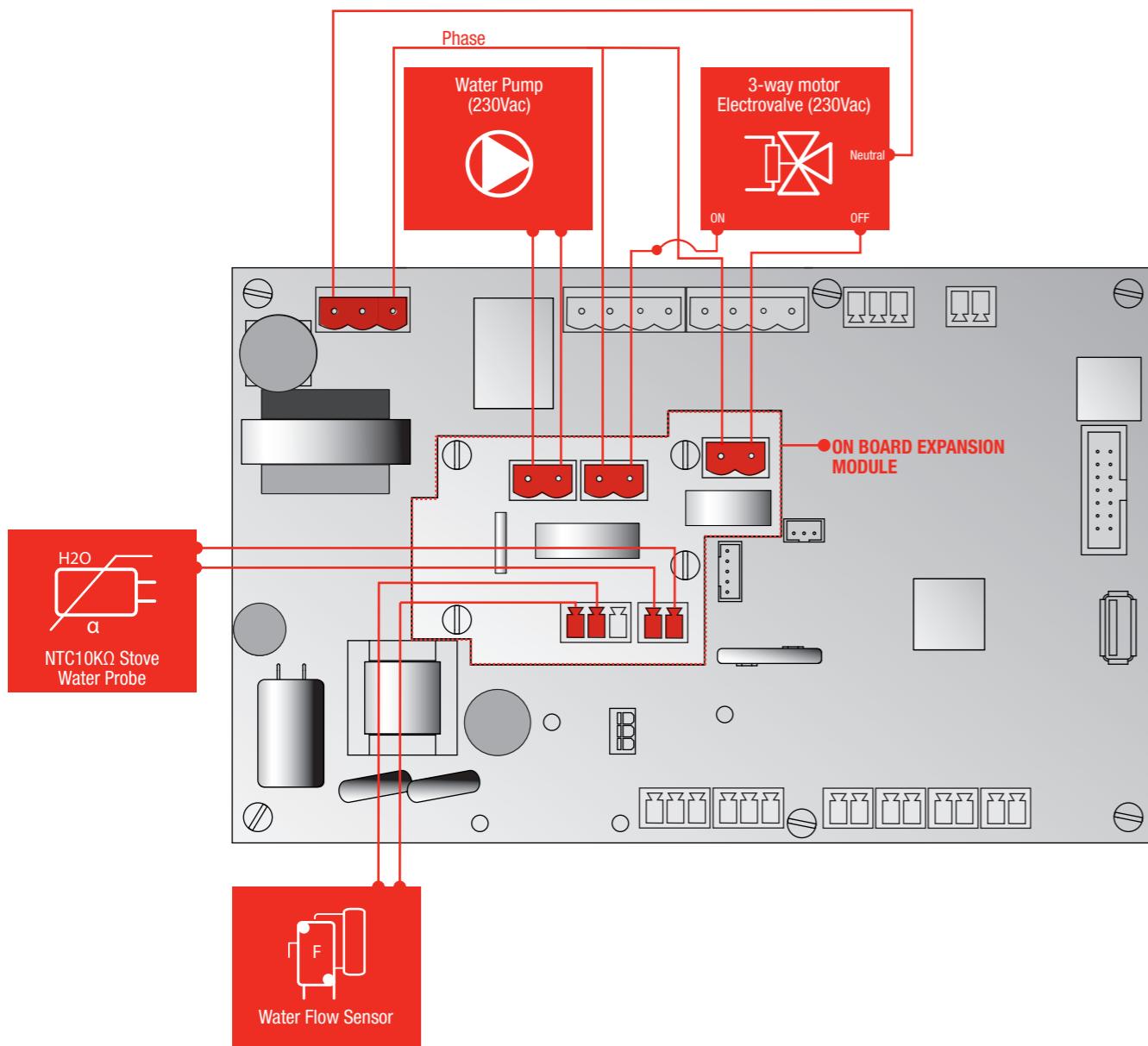
To operate in configuration 4 you must set parameter *"Hydro Configurat."* in the HYDRO MENU submenu to 4.
The Table below summarises the hydraulic system functionality (under normal operating conditions) in configuration 4:

STOVE WATER TEMPERATURE (T)		WATER FLOW SENSOR	PUMP	ELECTROVALVE
Stove Water T > Pump Temp. Sup	Stove Water T > TempAccumulSup	OFF	ON	OFF
		ON	ON	ON
	Stove Water T < TempAccumulInf	OFF	ON	OFF
		ON	ON	OFF
Stove Water T < Pump Temp. Inf	Stove Water T > TempAccumulSup	OFF	ON	ON
		ON	ON	ON
	Stove Water T < TempAccumulInf	OFF	OFF	OFF
		ON	OFF	OFF

The Table below summarises system functionality in anomalous cases:

ABNORMAL CONDITION	EVENT TYPE	SCROLLING STRING	PUMP	ELECTROVALVE
Stove Water Temp. > Alarm Water Temp.	ALARM	"TOO HIGH WATER TEMPE-RATURE"	ON	OFF
Stove Water Temp. > Warn Water Temp.	WARNINGS	"HIGH WATER TEMPERATU-RE"	ON	OFF
Stove Water Temp. < Min Water Temp.	WARNINGS	"LOW WATER TEMPERATU-RE"	ON	OFF
Stove Water Temperatu-re Probe is disconnected or damaged	ALARM	WATER PROBE KO	ON	OFF

## 8.7.5 Configuration 5

The following illustrates the hydraulic diagram for configuration 5:
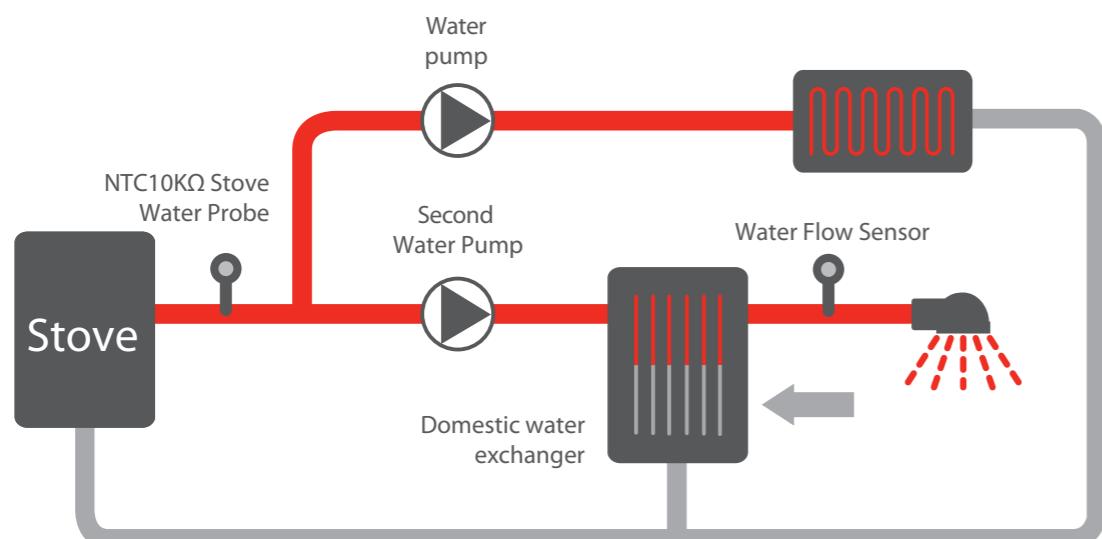
In the figure below a correct wiring model is shown for the Pellet Control Kit (to be integrated to the wiring shown in para. 3.3) in Hydro configuration for management of the hydraulic circuit for configuration 5:
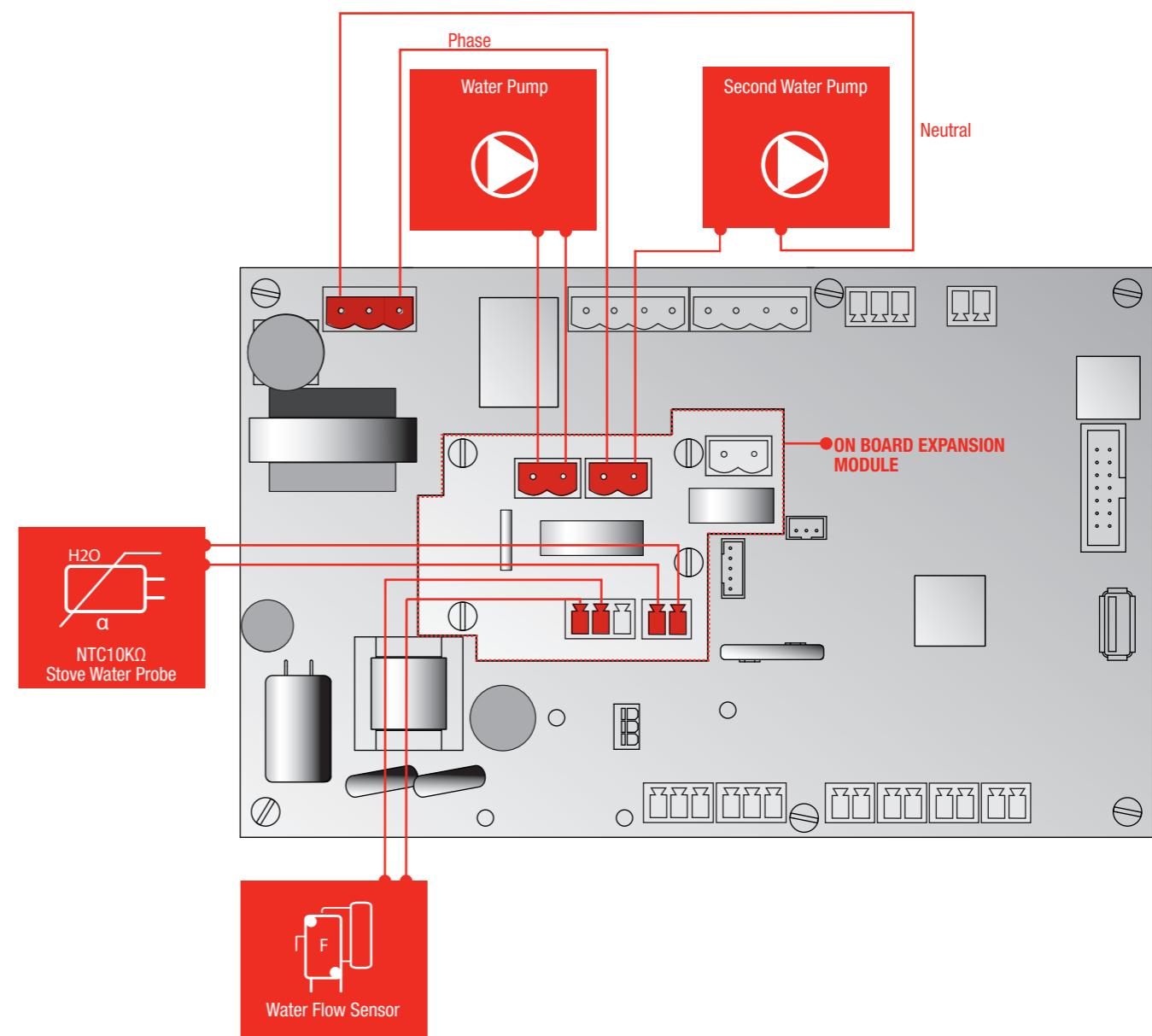
To operate in configuration 5 you must set parameter *"Hydro Configurat."* in the HYDRO MENU submenu to 5.

The Table below summarises the hydraulic system functionality (under normal operating conditions) in configuration 5:

| STOVE WATER TEMPERATURE (T)		WATER FLOW SENSOR	PUMP	SECOND PUMP
Stove Water T > Pump Temp. Sup	Stove Water T > TempAccumulSup	OFF	ON	OFF
		ON	OFF	ON
	Stove Water T < TempAccumulInf	OFF	ON	OFF
		ON	ON	OFF
Stove Water T < Pump Temp. Inf	Stove Water T > TempAccumulSup	OFF	OFF	ON
		ON	OFF	ON
	Stove Water T < TempAccumulInf	OFF	OFF	OFF
		ON	OFF	OFF

The Table below summarises system functionality in anomalous cases:

ABNORMAL CONDITION	EVENT TYPE	SCROLLING STRING	PUMP	SECOND PUMP
Stove Water Temp. > Alarm Water Temp.	ALARM	"TOO HIGH WATER TEMPERATURE"	ON	OFF
Stove Water Temp. > Warn Water Temp.	WARNINGS	"HIGH WATER TEMPERATURE"	ON	OFF
Stove Water Temp. < Min Water Temp.	WARNINGS	"LOW WATER TEMPERATURE"	ON	OFF
Stove Water Temperature Probe is disconnected or damaged	ALARM	WATER PROBE KO	ON	OFF

8.7.6. Configuration 6

The following illustrates the hydraulic diagram for configuration 6:
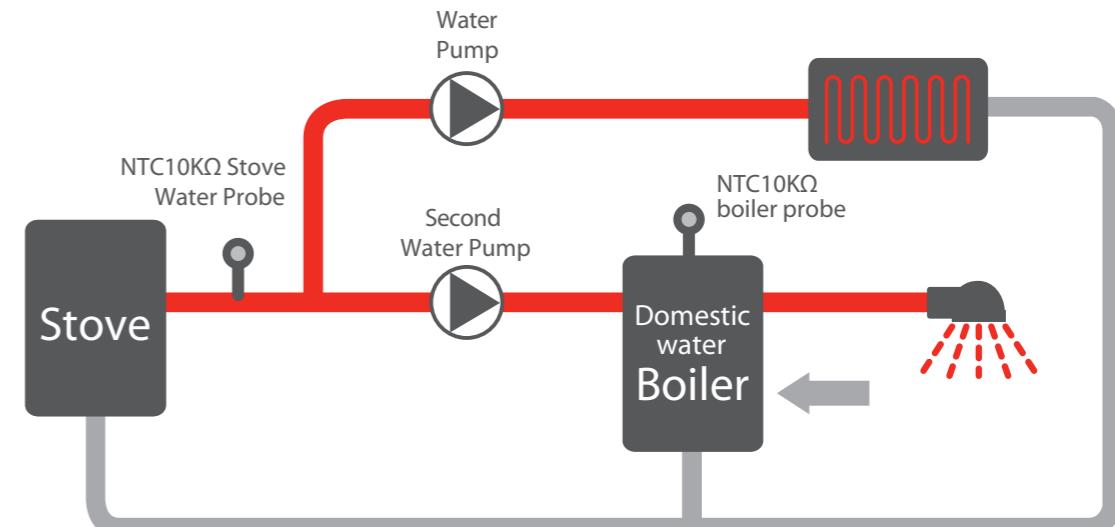
In the figure below a correct wiring model is shown for the Pellet Control Kit (to be integrated to the wiring shown in para. 3.3) in Hydro configuration for management of the hydraulic circuit for configuration 6:

Phase
Water Pump
Second Water Pump
Neutral
ON BOARD EXPANSION MODULE
H2O
α
NTC10KΩ
Stove Water Probe
H2O
α
Water Flow Sensor
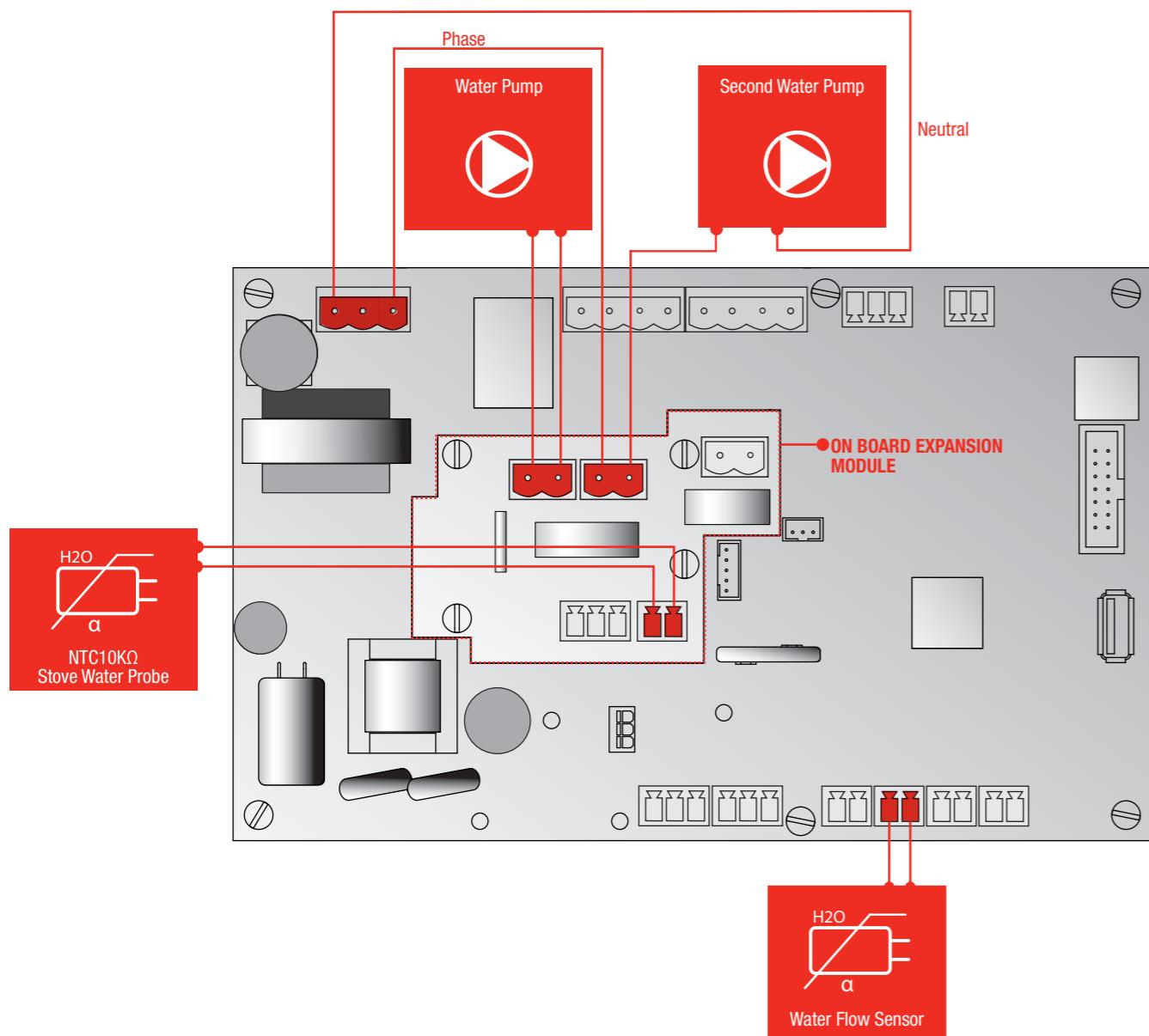
To operate in configuration 6 you must set parameter *"Hydro Configurat."* in the HYDRO MENU submenu to 6.
The Table below summarises the hydraulic system functionality (under normal operating conditions) in configuration 6:

STOVE WATER TEMPERATURE (T)		TEMPERATURE (T) BOILER WATER	PUMP	SECOND PUMP
Stove Water T > Pump Temp. Sup	Stove Water T > TempAccumulSup	Boiler Water T > TempAccumulSup	ON	OFF
		Boiler Water T < TempAccumulInf	OFF	ON
	Stove Water T < TempAccumulInf	Boiler Water T > TempAccumulSup	ON	OFF
		Boiler Water T < TempAccumulInf	ON	OFF
Stove Water T < Pump Temp. Inf	Stove Water T > TempAccumulSup	Boiler Water T > TempAccumulSup	OFF	OFF
		Boiler Water T < TempAccumulInf	OFF	ON
	Stove Water T < TempAccumulInf	Boiler Water T > TempAccumulSup	OFF	OFF
		Boiler Water T < TempAccumulInf	OFF	OFF

The Table below summarises system functionality in anomalous cases:

ABNORMAL CONDITION	EVENT TYPE	SCROLLING STRING	PUMP	SECOND PUMP
Stove Water Temp. > Alarm Water Temp.	ALARM	"TOO HIGH WATER TEMPERATURE"	ON	OFF
Stove Water Temp. > Alarm Water Temp.	WARNINGS	"HIGH WATER TEMPERATURE"	ON	OFF
Stove Water Temp. < Min Water Temp.	WARNINGS	"LOW WATER TEMPERATURE"	ON	OFF
Stove Water Temperature Probe disconnected or damaged	ALARM	WATER PROBE KO	ON	OFF
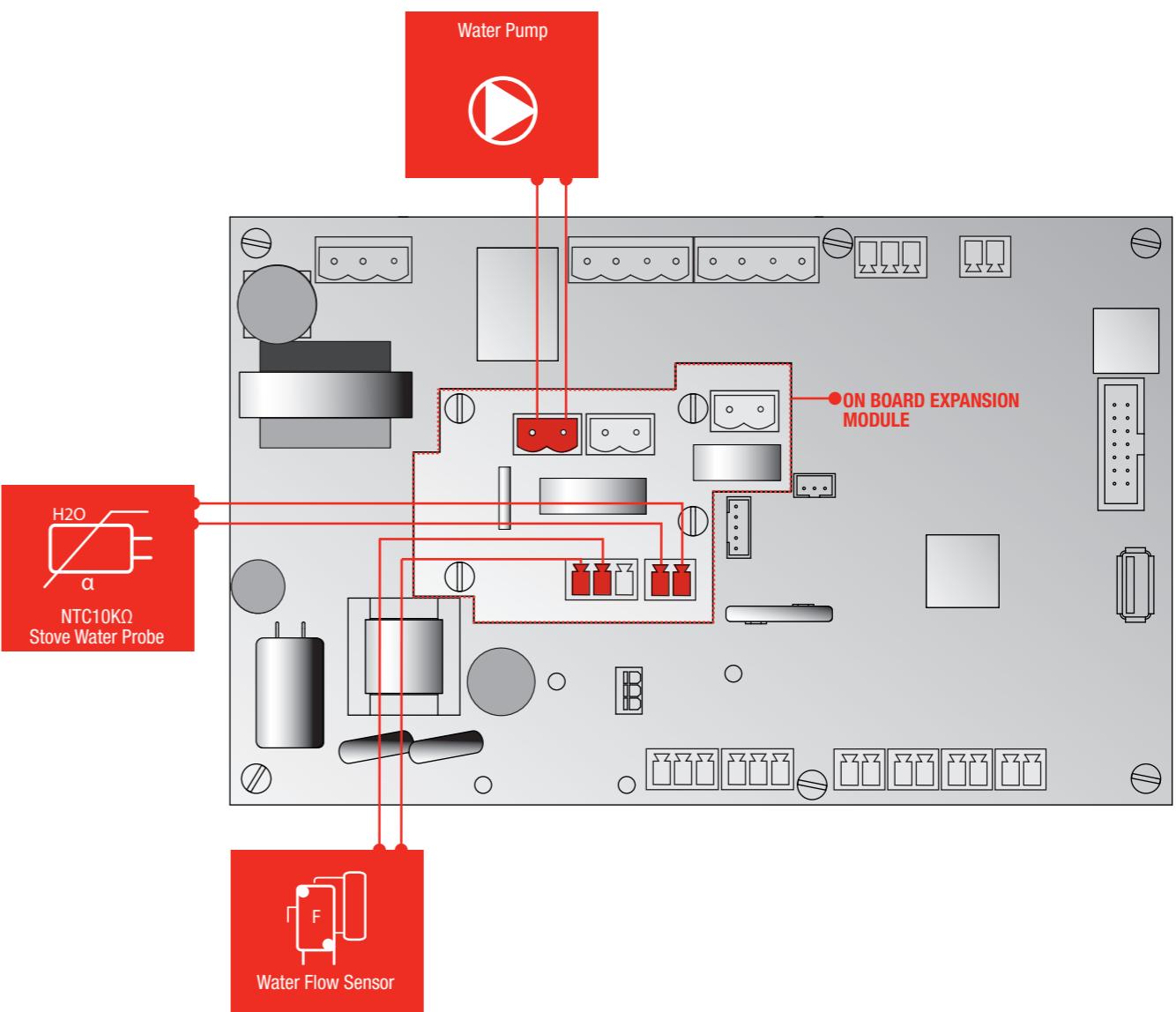
## 8.7.7. Configuration 7

The following illustrates the hydraulic diagram for configuration 7:

In the figure below a correct wiring model is shown for the Pellet Control Kit (to be integrated to the wiring shown in para. 3.3) in Hydro configuration for management of the hydraulic circuit for configuration 7:
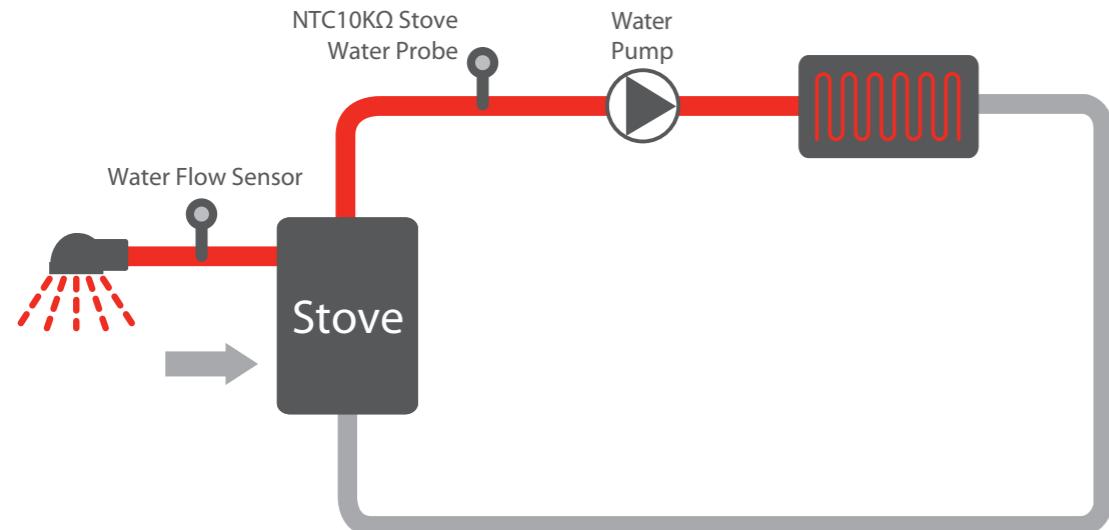
To operate in configuration 7 you must set parameter *"Hydro Configurat."* in the HYDRO MENU submenu to 7.

The Table below summarises the hydraulic system functionality (under normal operating conditions) in configuration 7:

| STOVE WATER TEMPERATURE (T)	WATER FLOW SENSOR	PUMP
Stove Water T > Pump Temp. Sup	OFF	ON
	ON	OFF
Stove Water T < Pump Temp. Inf	OFF	OFF
	ON	OFF

The Table below summarises system functionality in anomalous cases:

ABNORMAL CONDITION	EVENT TYPE	SCROLLING STRING	PUMP
Stove Water Temp. > Alarm Water Temp.	ALARM	"TOO HIGH WATER TEMPERATURE"	ON
Stove Water Temp. > Warn Water Temp.	WARNINGS	"HIGH WATER TEMPERATURE"	ON
Stove Water Temp. < Min Water Temp.	WARNINGS	"LOW WATER TEMPERATURE"	ON
Stove Water Temperature Probe is disconnected or damaged	ALARM	WATER PROBE KO	ON

8.7.8 Configuration 8

The following illustrates the hydraulic diagram for configuration 8:
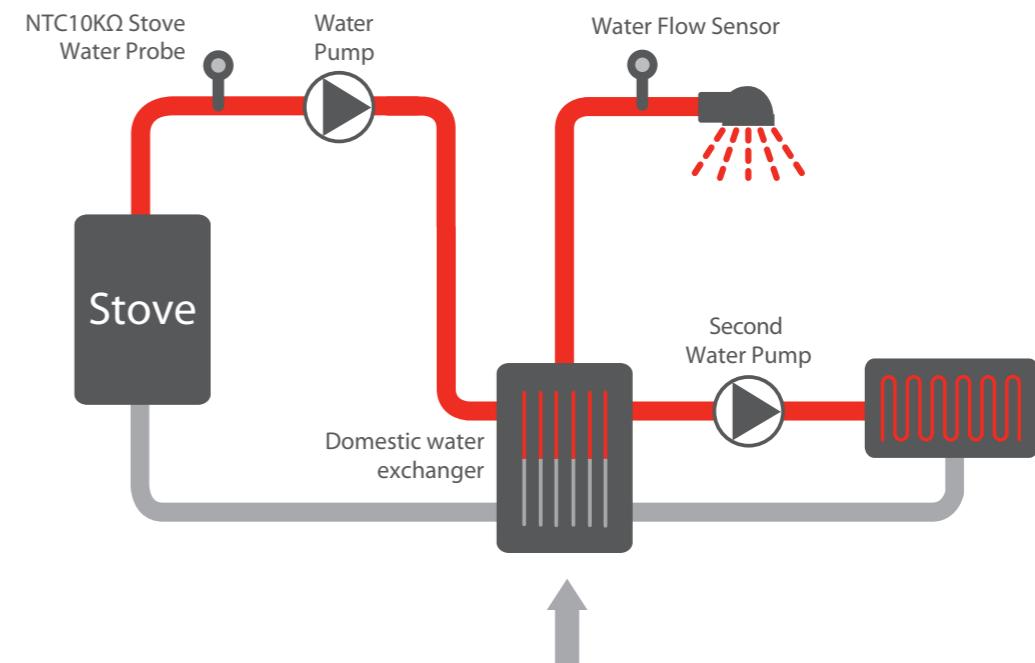
In the figure below a correct wiring model is shown for the Pellet Control Kit (to be integrated to the wiring shown in para. 3.3) in Hydro configuration for management of the hydraulic circuit for configuration 8:

Phase

Water Pump

Second Water Pump

Neutral

ON BOARD EXPANSION MODULE

H2O
α
NTC10KΩ
Stove Water Probe

F
Water Flow Sensor
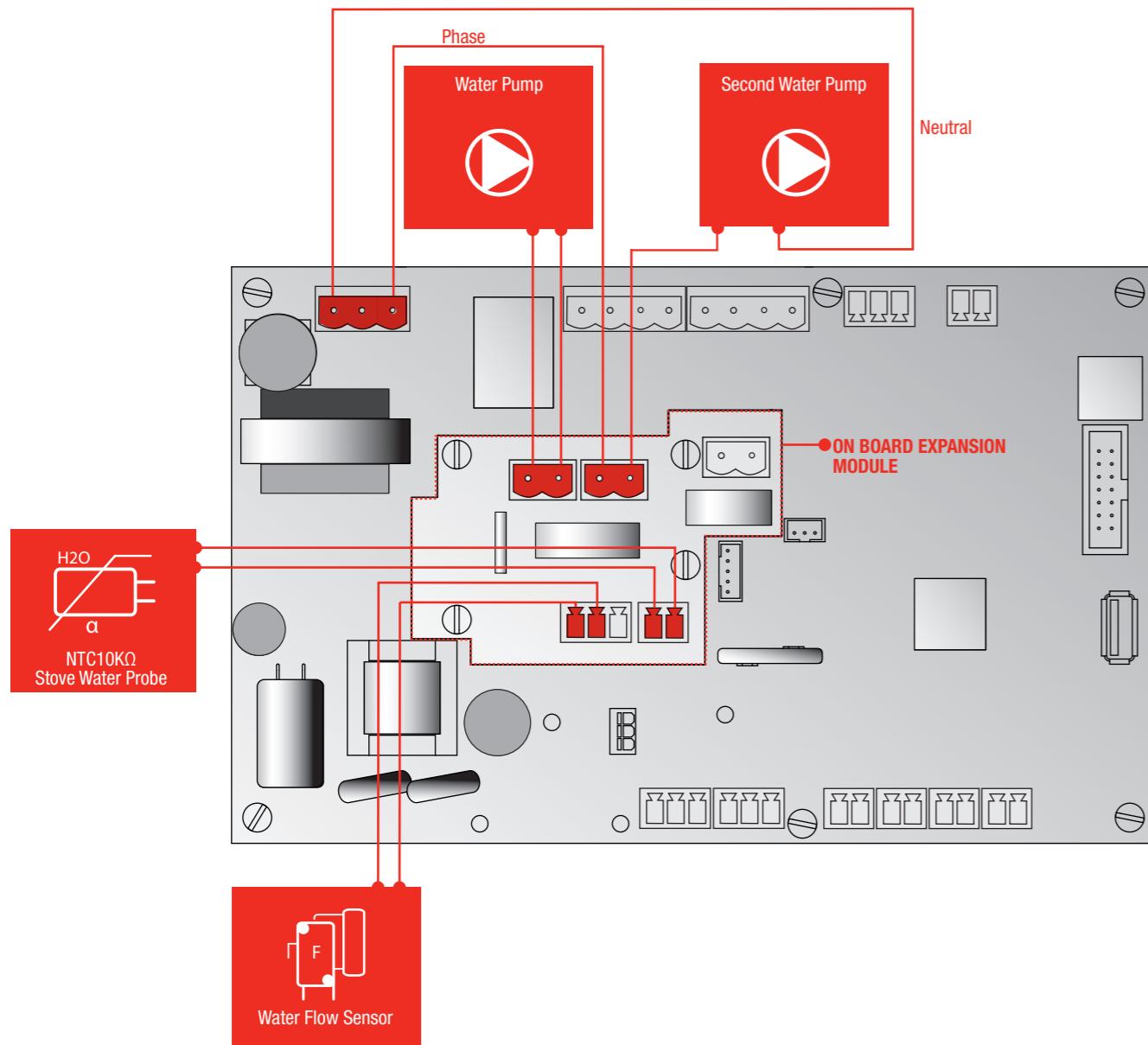
To operate in configuration 8 you must set parameter *"Hydro Configurat."* in the HYDRO MENU submenu to 8.
The Table below summarises the hydraulic system functionality (under normal operating conditions) in configuration 8:

STOVE WATER TEMPERATURE (T)		WATER FLOW SENSOR	PUMP	SECOND PUMP
Stove Water T > Pump Temp. Sup	Stove Water T > TempAccumulSup	OFF	ON	ON
		ON	ON	OFF
	Stove Water T < TempAccumulInf	OFF	ON	ON
		ON	OFF	OFF
Stove Water T < Pump Temp. Inf	Stove Water T > TempAccumulSup	OFF	ON	OFF
		ON	ON	OFF
	Stove Water T < TempAccumulInf	OFF	OFF	OFF
		ON	OFF	OFF

The Table below summarises system functionality in anomalous cases:

| ABNORMAL CONDITION	EVENT TYPE	SCROLLING STRING	PUMP	SECOND PUMP
Stove Water Temp. > Alarm Water Temp.	ALARM	"TOO HIGH WATER TEMPE-RATURE"	ON	ON
Stove Water Temp. > Warn Water Temp.	WARNINGS	"HIGH WATER TEMPERA-TURE"	ON	ON
Stove Water Temp. < Min Water Temp.	WARNINGS	"LOW WATER TEMPERA-TURE"	ON	ON
Stove Water Temperature Probe is disconnected or damaged	ALARM	WATER PROBE KO	ON	ON

The Pellet Control Kit can also be configured to manage Ducted pellet stoves, with the aid of the on-board module "On Board Expansion". In particular you can manage a pellet stove with a single Ambient Fan for ducting (Single Ducted) or with two Ambient Fans for ducting (Double Ducted).
To configure the system in Single Ducted mode, you must change the "STOVE TYPE" parameter (in CONFIGURATION submenu) from "Air" to "Single Ducted" while to set the system to Double Ducted mode the "STOVE TYPE" parameter must be set to "Double Ducted".

9.1 WIRING
9.1.1 Single Ducted Air

For wiring, please refer to paragraph 3.3, integrating the wiring harness illustrated in the image below:
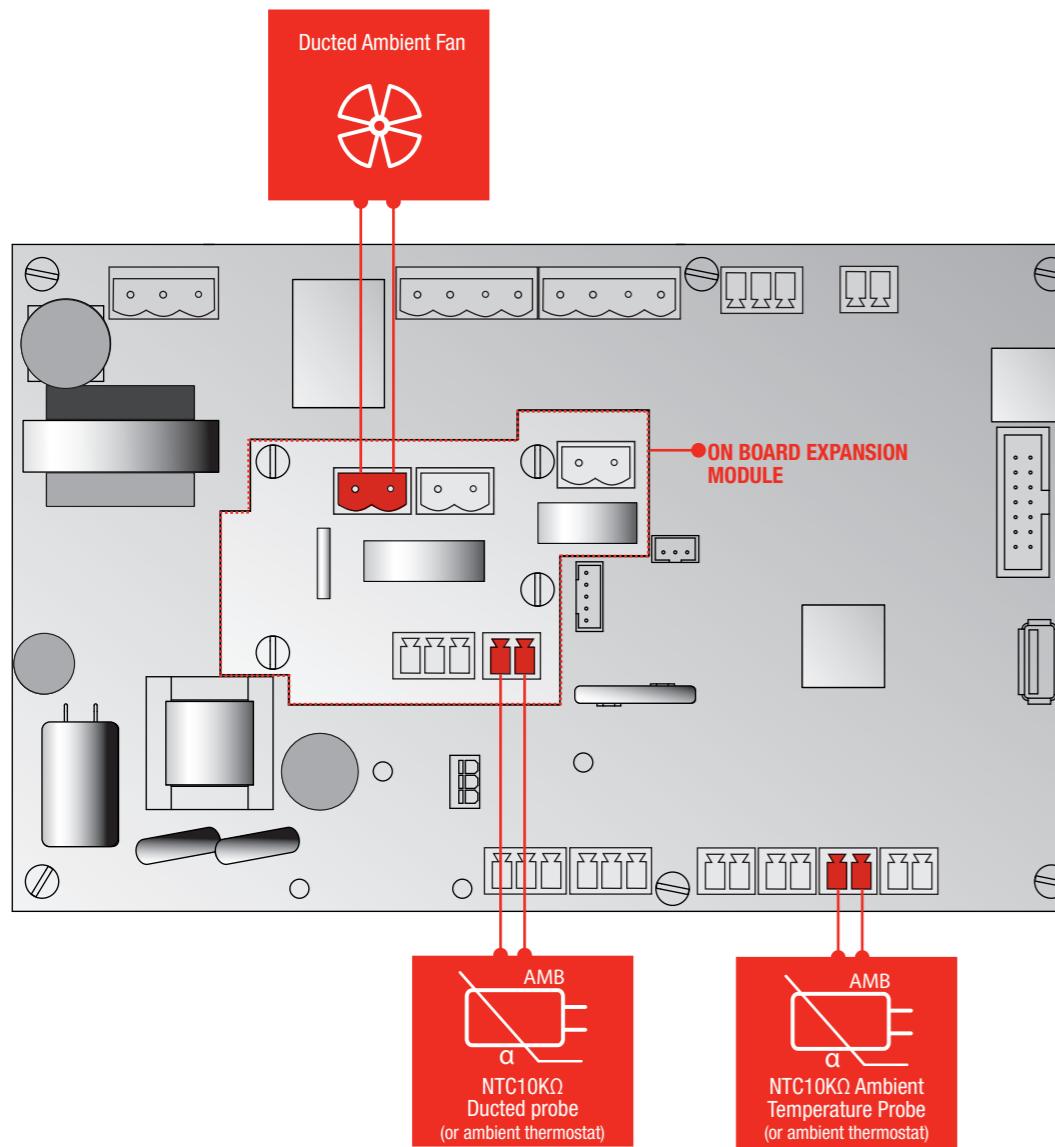
9.1.2 Double Ducted Air

For wiring, please refer to paragraph 3.3, integrating the wiring harness illustrated in the image below:
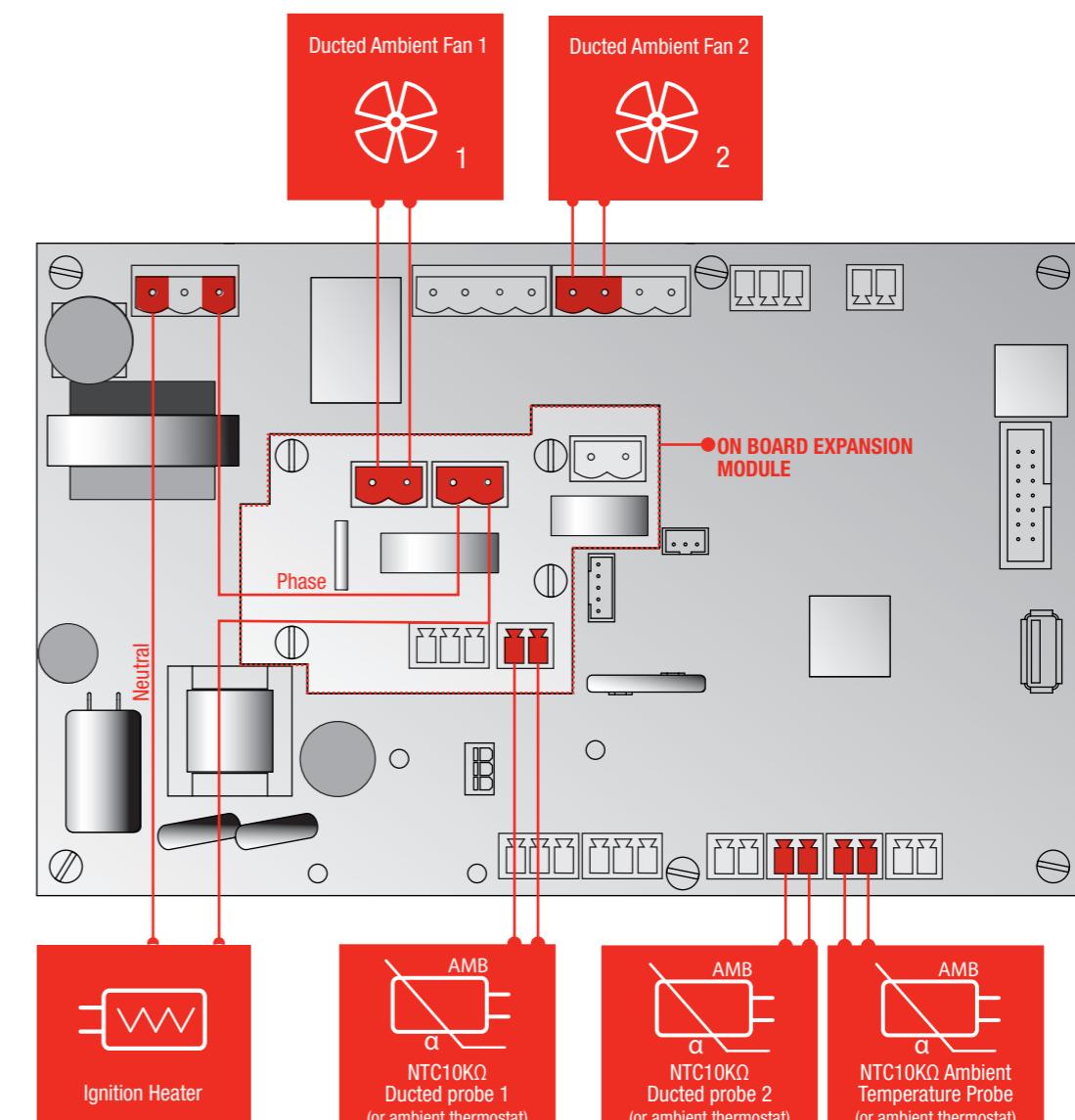
9.2 SPECIFIC TECHNICAL PARAMETERS FOR DUCTED AIR CONFIGURATION

When in Ducted configuration (Single or Double) you may display and set the following technical parameters:

| LOGIN	MAIN MENU	LEVEL 1	LEVEL 2	STRING	DESCRIPTION	RANGE	RES.	UNIT
OEM	PROCESS	WORKING	COMFORT 1	Duct1 Ambient Fan	Ducted Ambient Fan 1 speed associated to Comfort1	0-100	1	%
				Duct2 Ambient Fan	Ducted Ambient Fan 2 speed associated to Comfort1. Shown only for Double Air Ducted	0-100	1	%
				Duct1 Temp. Thrs.	Smoke temperature threshold, above which the Ducted Ambient Fan 1 is activated at Comfort 1, if the Ducted Fan 1 is in AUTO mode. If the smoke temperature threshold is below this value the Ducted Ambient Fan 1 is switched off	10-350	1	°C
				Duct2 Temp. Thrs.	Smoke temperature threshold, above which the Ducted Ambient Fan 2 is activated at Comfort 1, if the Ducted Fan 2 is in AUTO mode. If the smoke temperature threshold is below this value the Ducted Ambient Fan 2 is switched off. Shown only for Double Air Ducted	10-350	1	°C
			COMFORT 2	Duct1 Ambient Fan	Ducted Ambient Fan 1 speed associated to Comfort2	0-100	1	%
				Duct2 Ambient Fan	Ducted Ambient Fan 2 speed associated to Comfort2. Shown only for Double Air Ducted	0-100	1	%
				Duct1 Temp. Thrs.	Smoke temperature threshold, above which the Ducted Ambient Fan 1 is activated at Comfort 2, if the Ducted Fan 1 is in AUTO mode.	10-350	1	°C
				Duct2 Temp. Thrs.	Smoke temperature threshold, above which the Ducted Ambient Fan 2 is activated at Comfort 2, if the Ducted Fan 2 is in AUTO mode. Shown only for Double Air Ducted	10-350	1	°C
			COMFORT 3	Duct1 Ambient Fan	Ducted Ambient Fan 1 speed associated to Comfort3	0-100	1	%
				Duct2 Ambient Fan	Ducted Ambient Fan 2 speed associated to Comfort3. Shown only for Double Air Ducted	0-100	1	%
				Duct1 Temp. Thrs.	Smoke temperature threshold, above which the Ducted Ambient Fan 1 is activated at Comfort 3, if the Ducted Fan 1 is in AUTO mode	10-350	1	°C
				Duct2 Temp. Thrs.	Smoke temperature threshold, above which the Ducted Ambient Fan 2 is activated at Comfort 3, if the Ducted Fan 2 is in AUTO mode. Shown only for Double Air Ducted	10-350	1	°C
			COMFORT 4	Duct1 Ambient Fan	Ducted Ambient Fan 1 speed associated to Comfort4	0-100	1	%
				Duct2 Ambient Fan	Ducted Ambient Fan 2 speed associated to Comfort4. Shown only for Double Air Ducted	0-100	1	%
				Duct1 Temp. Thrs.	Smoke temperature threshold, above which the Ducted Ambient Fan 1 is activated at Comfort 4, if the Ducted Fan 1 is in AUTO mode	10-350	1	°C
				Duct2 Temp. Thrs.	Smoke temperature threshold, above which the Ducted Ambient Fan 2 is activated at Comfort 4, if the Ducted Fan 2 is in AUTO mode. Shown only for Double Air Ducted	10-350	1	°C

DUCTED AIR CONFIGURATION

LOGIN	MAIN MENU	LEVEL 1	LEVEL 2	STRING	DESCRIPTION	RANGE	RES.	UNIT
OEM	PROCESS	WORKING	COMFORT 5	Duct1 Ambient Fan	Ducted Ambient Fan 1 speed associated to Comfort5	0-100	1	%
				Duct2 Ambient Fan	Ducted Ambient Fan 2 speed associated to Comfort5. Shown only for Double Air Ducted	0-100	1	%
				Duct1 Temp. Thrs.	Smoke temperature threshold, above which the Ducted Ambient Fan 1 is activated at Comfort 5, if the Ducted Fan 1 is in AUTO mode	10-350	1	°C
				Duct2 Temp. Thrs.	Smoke temperature threshold, above which the Ducted Ambient Fan 2 is activated at Comfort 5, if the Ducted Fan 2 is in AUTO mode. Shown only for Double Air Ducted	10-350	1	°C
			THERMOREGUL.	Duct1 Inf Diff.	Value to subtract from Set Point temperature associated to Ducted Fan 1 to reach temperature limit below which Comfort is set to "Max Comfort". Used only if "AMBIENT PROBE" is set to "NTC10K"	0.1-5	0.1	°C
				Duct1 Sup Diff.	Value to be added to the Set Point temperature associated with Ducted 1 to obtain the temperature limit above which Comfort is set to "Min Comfort", even if other ambient temperature probes (in the room containing the stove and that of any additional duct) read an ambient temperature above their relative upper limit. Used only if "AMBIENT PROBE" is set to "NTC10K"	0.1-5	0.1	°C
				Duct2 Inf Diff.	Value to subtract from Set Point temperature associated to Ducted Fan 2 to reach temperature limit below which Comfort is set to "Max Comfort". Shown only for Double Air Ducted. Used only if "AMBIENT PROBE" is set to "NTC10K"	0.1-5	0.1	°C
				Duct2 Sup Diff.	Value to be added to the Set Point temperature associated with Ducted 2 to obtain the temperature limit above which Comfort is set to "Min Comfort", even if other ambient temperature probes (in the room containing the stove and that of the first duct) read an ambient temperature above their relative upper limit. Shown only for Double Air Ducted. Used only if "AMBIENT PROBE" is set to "NTC10K"	0.1-5	0.1	°C

LEGEND: | OEM | Menu accessible only by OEM with specific password

9.3 ALARMS AND WARNINGS IN DUCTED AIR CONFIGURATION

9.3.1 Alarms

DUCTED 1 FAN KO

SHOWN ON DISPLAY (SCROLLING)	**"DUCTED 1 FAN KO"**
ABNORMAL DESCRIPTION	Ducted Ambient Fan 1 phases disconnected or Ducted Ambient Fan 1 output damaged
ACTIONS TAKEN	During the Alarm phase: Ignition Heater OFF, Auger OFF, Smoke Motor to maximum speed, until stove cold (smoke temperature below threshold of "Smoke Temperat." in LIGHTING OFF submenu)
USER RESET	Display knob depressed for 5s
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"DUCTED1 FAN KO"

DUCTED 2 FAN KO

SHOWN ON DISPLAY (SCROLLING)	**"DUCTED 2 FAN KO"**
ABNORMAL DESCRIPTION	Ducted Ambient Fan 2 phases disconnected or Ducted Ambient Fan 2 output damaged
ACTIONS TAKEN	During the Alarm phase: Ignition Heater OFF, Auger OFF, Smoke Motor to maximum speed, until stove cold (smoke temperature below threshold of "Smoke Temperat." in LIGHTING OFF submenu)
USER RESET	Display knob depressed for 5s
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"DUCTED2 FAN KO"

For all:

INTERMITTENT BEEP ALARM	YES

9.3.2 Warnings

DUCTED 1 AIR PROBE KO

SHOWN ON DISPLAY (SCROLLING)	**"DUCTED 1 AIR PROBE KO"**
ABNORMAL DESCRIPTION	Ambient Temperature Probe 1 (connected to NTC INPUT of On Board Expansion) faulty or disconnected
ACTIONS TAKEN	Warning Message activated + Ducted Ambient Fan 1 working at minimum power + Automatic setting to Comfort mode if all other ambient temperature probes involved in thermoregulation management are faulty
USER RESET	Display knob short depress
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"DUC.AIR SEN.1KO"

DUCTED 2 AIR PROBE KO

SHOWN ON DISPLAY (SCROLLING)	**"DUCTED 2 AIR PROBE KO"**
ABNORMAL DESCRIPTION	Ambient Temperature Probe 2 (connected to NTC3 INPUT of Control Unit) faulty or disconnected
ACTIONS TAKEN	Warning Message activated + Ducted Ambient Fan 2 working at minimum power + Automatic setting to Comfort mode if all other ambient temperature probes involved in thermoregulation management are faulty
USER RESET	Display knob short depress
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"DUC.AIR SEN.2KO"

THERMOSTAT ON NTC3 OUT OF RANGE

SHOWN ON DISPLAY (SCROLLING)	**"THERMOSTAT ON NTC3 OUT OF RANGE"**
ABNORMAL DESCRIPTION	Thermostat voltage supply in input NTC3 out of range
ACTIONS TAKEN	Comfort Mode automatically set and Antifreeze (if already enabled) is disabled
USER RESET	Display knob short push
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"OUT TH NTC3 KO"

THERMOSTAT ON NTC AUX OUT OF RANGE

SHOWN ON DISPLAY (SCROLLING)	**"THERMOSTAT ON AUX NTC OUT OF RANGE"**
ABNORMAL DESCRIPTION	Thermostat voltage supply in intake NTC on On Board Expansion out of range
ACTIONS TAKEN	Comfort Mode automatically set and Antifreeze (if already enabled) is disabled
USER RESET	Display knob short push
DISPLAY SAVED TO EVENTS LOG (INTERNAL MEMORY)	"OUT TH NTCA KO"

9.4 FUNCTIONALITY WITH DUCTED AIR CONFIGURATION

9.4.1 Ducted Ambient Fan management

According to the value set in parameter "DUCTED FAN 1" in the User Menu, the Ducted Ambient Fan associated to it (connected to Triac OUT of the On Board Expansion) can operate in the following modes:

▶ LEVEL 1-5: Ducted Ambient Fan 1 speed independent of Comfort level set

▶ AUTO: Ducted Ambient Fan speed automatically linked to Comfort level set (Automatic Fan Management)

▶ OFF: The Ducted Ambient Fan is turned off and the system does not take into account the reading in the room heated by Ducted Ambient Fan 1 for thermoregulation

The same considerations apply to parameter "DUCTED FAN 2" in the User Menu, associated to the second Ducted Ambient Fan (connected to OUT3 on the Control Unit), where the stove is configured as Double Ducted.

9.4.2 Thermoregulation management

When the system is configured to operate in thermoregulation, there are various operational possibilities according to the value set in parameter "AMBIENT PROBE":

▶ "NONE":
In this case, no ambient temperature probe is present and the stove is set automatically to Comfort Regulation.

▶ "NTC10K":
In this case, an NTC10KΩ type Ambient Temperature Probe must be used in all thermoregulated rooms. Also only in this configuration it is possible to use the user parameters "DUCTED SET 1" and "DUCTED SET 2" (in the case of Double Ducted) to set the Set Point temperature in the room managed by the Ducted Ambient Fan associated with these parameters

▶ "THERMOSTAT":
In this case an external ambient thermostat, normally open (the contacts must close if the room temperature falls below the temperature threshold set) must be used in all thermoregulated rooms

9.4.3 Thermoregulation with Single Ducted Air Configuration

The table below summarises management of stove and main Ambient Fan and Ducted Ambient Fan power, where configured as Single Ducted:

ROOM STATE		PARAMETERS SETTING	SYSTEM FUNCTIONALITY		
MAIN ROOM STATE	DUCTED 1 ROOM STATE	DUCTED FAN 1 PARAMETER VALUE	STOVE POWER	MAIN ROOM AMBIENT FAN MANAGEMENT	DUCTED ROOM AMBIENT FAN MANAGEMENT
Cold	Cold	OFF	Max Comfort	Automatic Fan Management	OFF
Cold	Warm	OFF	Max Comfort	Automatic Fan Management	OFF
Warm	Cold	OFF	Min Comfort	Automatic Fan Management	OFF
Warm	Warm	OFF	Min Comfort	Automatic Fan Management	OFF
Cold	Cold	LEVEL 1-5	Max Comfort	Automatic Fan Management	Constant Power (Comfort 1-5)
Cold	Warm	LEVEL 1-5	Max Comfort	Automatic Fan Management	Constant Power (Comfort 1-5)
Warm	Cold	LEVEL 1-5	Min Comfort	Automatic Fan Management	Constant Power (Comfort 1-5)
Warm	Warm	LEVEL 1-5	Min Comfort	Automatic Fan Management	Constant Power (Comfort 1-5)
Cold	Cold	AUTO	Max Comfort	Automatic Fan Management	Automatic Fan Management
Cold	Warm	AUTO	Max Comfort	Automatic Fan Management	Minimum Power (Comfort 1)
Warm	Cold	AUTO	Min Comfort	Minimum Power (Comfort 1)	Automatic Fan Management
Warm	Warm	AUTO	Min Comfort	Automatic Fan Management	Automatic Fan Management

If "AMBIENT PROBE" is set to "NTC10K" and one of the two Ambient Temperature Probes (in the main or ducted room) is faulty, the system regulates the stove power taking into account only the reading from the working ambient temperature probe. Also the Ducted Ambient Fan associated to the faulty Ambient Temperature Probe is managed at minimum power (Comfort 1). If both temperature probes are inoperative at the same time, the system moves automatically to Comfort Regulation.

9.4.4 Thermoregulation with Double Ducted Air Configuration

The table below summarises management of stove and main Ambient Fan and the two Ducted Ambient Fans power, where configured as Double Ducted:

ROOM STATE			PARAMETERS SETTING		SYSTEM FUNCTIONALITY			
MAIN ROOM STATE	DUCTED 1 ROOM STATE	DUCTED 2 ROOM STATE	DUCTED FAN 1 PARAMETER VALUE	DUCTED FAN 2 PARAMETER VALUE	STOVE POWER	MAIN ROOM AMBIENT FAN MANAGEMENT	DUCTED ROOM 1 AMBIENT FAN MANAGEMENT	DUCTED ROOM 2 AMBIENT FAN MANAGEMENT
Cold	Cold	Cold	OFF	OFF	Max Comfort	Automatic Fan Management	OFF	OFF
		Warm						
	Warm	Cold						
		Warm						
Warm	Cold	Cold			Min Comfort			
		Warm						
	Warm	Cold						
		Warm						
Cold	Cold	Cold	LEVEL 1-5	OFF	Max Comfort	Automatic Fan Management	Constant Power (Comfort1-5)	OFF
		Warm						
	Warm	Cold						
		Warm						
Warm	Cold	Cold			Min Comfort			
		Warm						
	Warm	Cold						
		Warm						
Cold	Cold	Cold	AUTO	OFF	Max Comfort	Automatic Fan Management	Automatic Fan Management	OFF
		Warm					Minimum Power (Comfort 1)	
	Warm	Cold						
		Warm				Minimum Power (Comfort 1)		
Warm	Cold	Cold			Min Comfort		Automatic Fan Management	
		Warm						
	Warm	Cold				Automatic Fan Management		
		Warm						

ROOM STATE			PARAMETERS SETTING		SYSTEM FUNCTIONALITY			
MAIN ROOM STATE	DUCTED 1 ROOM STATE	DUCTED 2 ROOM STATE	DUCTED FAN 1 PARAMETER VALUE	DUCTED FAN 2 PARAMETER VALUE	STOVE POWER	MAIN ROOM AMBIENT FAN MANAGEMENT	DUCTED ROOM 1 AMBIENT FAN MANAGEMENT	DUCTED ROOM 2 AMBIENT FAN MANAGEMENT
Cold	Cold	Cold	OFF	LEVEL 1-5	Max Comfort	Automatic Fan Management	OFF	Constant Power (Comfort1-5)
		Warm						
	Warm	Cold						
		Warm						
Warm	Cold	Cold			Min Comfort			
		Warm						
	Warm	Cold						
		Warm						
Cold	Cold	Cold	LEVEL 1-5	LEVEL 1-5	Max Comfort	Automatic Fan Management	Constant Power (Comfort1-5)	Constant Power (Comfort1-5)
		Warm						
	Warm	Cold						
		Warm						
Warm	Cold	Cold			Min Comfort			
		Warm						
	Warm	Cold						
		Warm						
Cold	Cold	Cold	AUTO	LEVEL 1-5	Max Comfort	Automatic Fan Management	Automatic Fan Management	Constant Power (Comfort1-5)
		Warm					Minimum Power (Comfort 1)	
	Warm	Cold				Minimum Power (Comfort 1)	Automatic Fan Management	
		Warm						
Warm	Cold	Cold			Min Comfort	Automatic Fan Management	Automatic Fan Management	Constant Power (Comfort1-5)
		Warm						
	Warm	Cold						
		Warm						

ROOM STATE			PARAMETERS SETTING		SYSTEM FUNCTIONALITY			
MAIN ROOM STATE	DUCTED 1 ROOM STATE	DUCTED 2 ROOM STATE	DUCTED FAN 1 PARAMETER VALUE	DUCTED FAN 2 PARAMETER VALUE	STOVE POWER	MAIN ROOM AMBIENT FAN MANAGEMENT	DUCTED ROOM 1 AMBIENT FAN MANAGEMENT	DUCTED ROOM 2 AMBIENT FAN MANAGEMENT
Cold	Cold	Cold	OFF	AUTO	Max Comfort	Automatic Fan Management	OFF	Automatic Fan Management
		Warm						Minimum Power (Comfort 1)
	Warm	Cold						Automatic Fan Management
		Warm						Minimum Power (Comfort 1)
Warm	Cold	Cold				Minimum Power (Comfort 1)		Automatic Fan Management
		Warm			Min Comfort	Automatic Fan Management		Automatic Fan Management
	Warm	Cold			Max Comfort	Minimum Power (Comfort 1)		Automatic Fan Management
		Warm			Min Comfort	Automatic Fan Management		
Cold	Cold	Cold	LEVEL 1-5	AUTO	Max Comfort	Automatic Fan Management	Constant Power (Comfort1-5)	Automatic Fan Management
		Warm						Minimum Power (Comfort 1)
	Warm	Cold						Automatic Fan Management
		Warm						Minimum Power (Comfort 1)
Warm	Cold	Cold				Minimum Power (Comfort 1)		Automatic Fan Management
		Warm			Min Comfort	Automatic Fan Management		Automatic Fan Management
	Warm	Cold			Max Comfort	Minimum Power (Comfort 1)		Automatic Fan Management
		Warm			Min Comfort	Automatic Fan Management		

ROOM STATE			PARAMETERS SETTING		SYSTEM FUNCTIONALITY			
MAIN ROOM STATE	DUCTED 1 ROOM STATE	DUCTED 2 ROOM STATE	DUCTED FAN 1 PARAMETER VALUE	DUCTED FAN 2 PARAMETER VALUE	STOVE POWER	MAIN ROOM AMBIENT FAN MANAGEMENT	DUCTED ROOM 1 AMBIENT FAN MANAGEMENT	DUCTED ROOM 2 AMBIENT FAN MANAGEMENT
Cold	Cold	Cold	AUTO	AUTO	Max Comfort	Automatic Fan Management	Automatic Fan Management	Automatic Fan Management
Cold	Cold	Warm	AUTO	AUTO	Max Comfort	Automatic Fan Management	Automatic Fan Management	Minimum Power (Comfort 1)
Cold	Warm	Cold	AUTO	AUTO	Max Comfort	Automatic Fan Management	Minimum Power (Comfort 1)	Automatic Fan Management
Cold	Warm	Warm	AUTO	AUTO	Max Comfort	Automatic Fan Management	Minimum Power (Comfort 1)	Minimum Power (Comfort 1)
Warm	Cold	Cold	AUTO	AUTO	Max Comfort	Minimum Power (Comfort 1)	Automatic Fan Management	Automatic Fan Management
Warm	Cold	Warm	AUTO	AUTO	Max Comfort	Minimum Power (Comfort 1)	Automatic Fan Management	Minimum Power (Comfort 1)
Warm	Warm	Cold	AUTO	AUTO	Max Comfort	Minimum Power (Comfort 1)	Minimum Power (Comfort 1)	Automatic Fan Management
Warm	Warm	Warm	AUTO	AUTO	Min Comfort	Automatic Fan Management	Automatic Fan Management	Automatic Fan Management

If "AMBIENT PROBE" is set to "NTC10K" and one or two of the three Ambient Temperature Probes (in the main or ducted room) is faulty, the system regulates the stove power taking into account only the readings from the working ambient temperature probes.

Also the Ducted Ambient Fan associated to the faulty ambient temperature probe is managed at minimum power (Comfort 1). If all temperature probes are inoperative at the same time, the system moves automatically to Comfort Regulation.